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HINTS ON  
HORSE-SHOEING.

BY JOHN KIERNAN, CHIEF FARRIER,

CAVALRY DEPOT CARLISLE, P. A.

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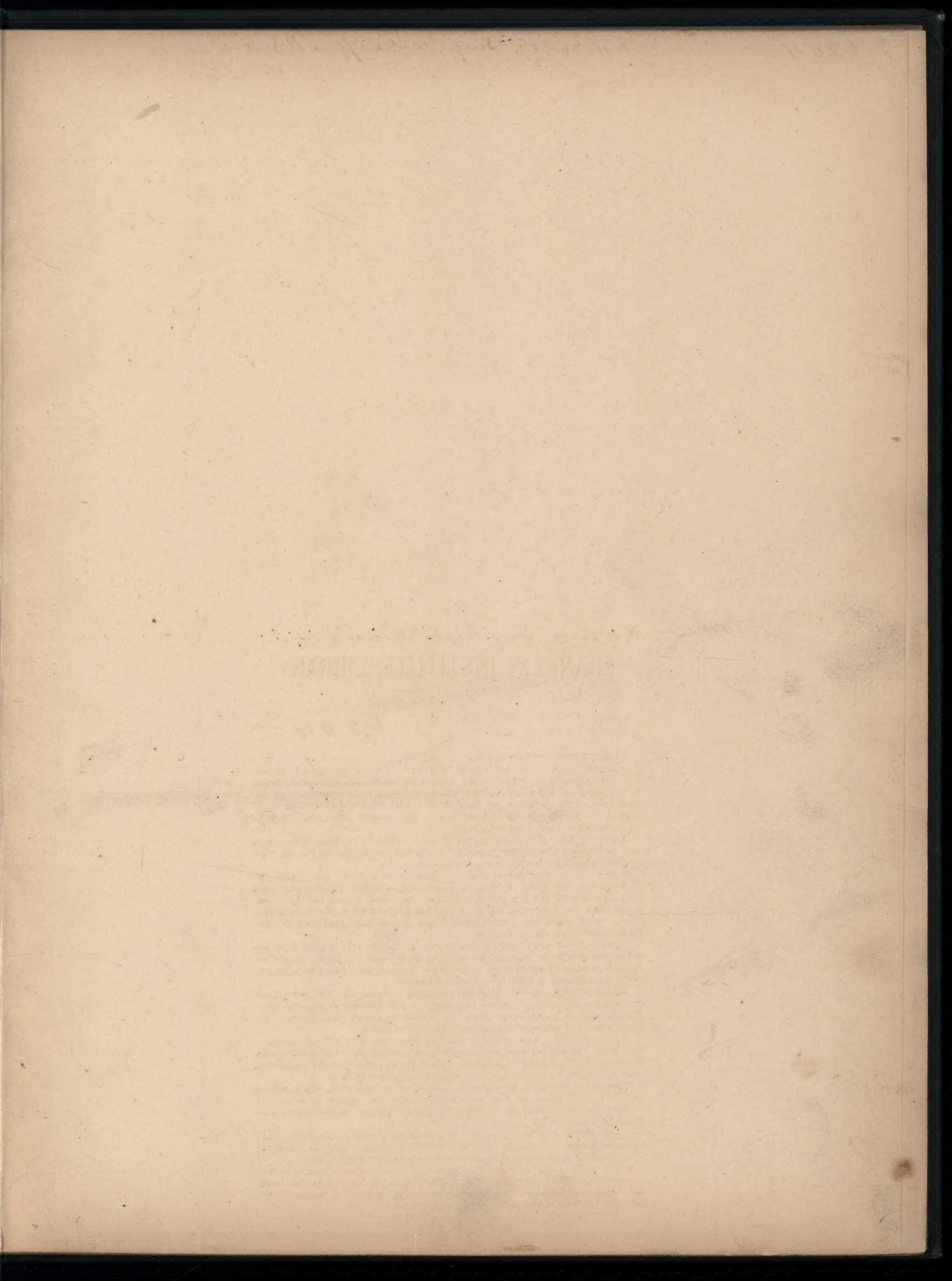
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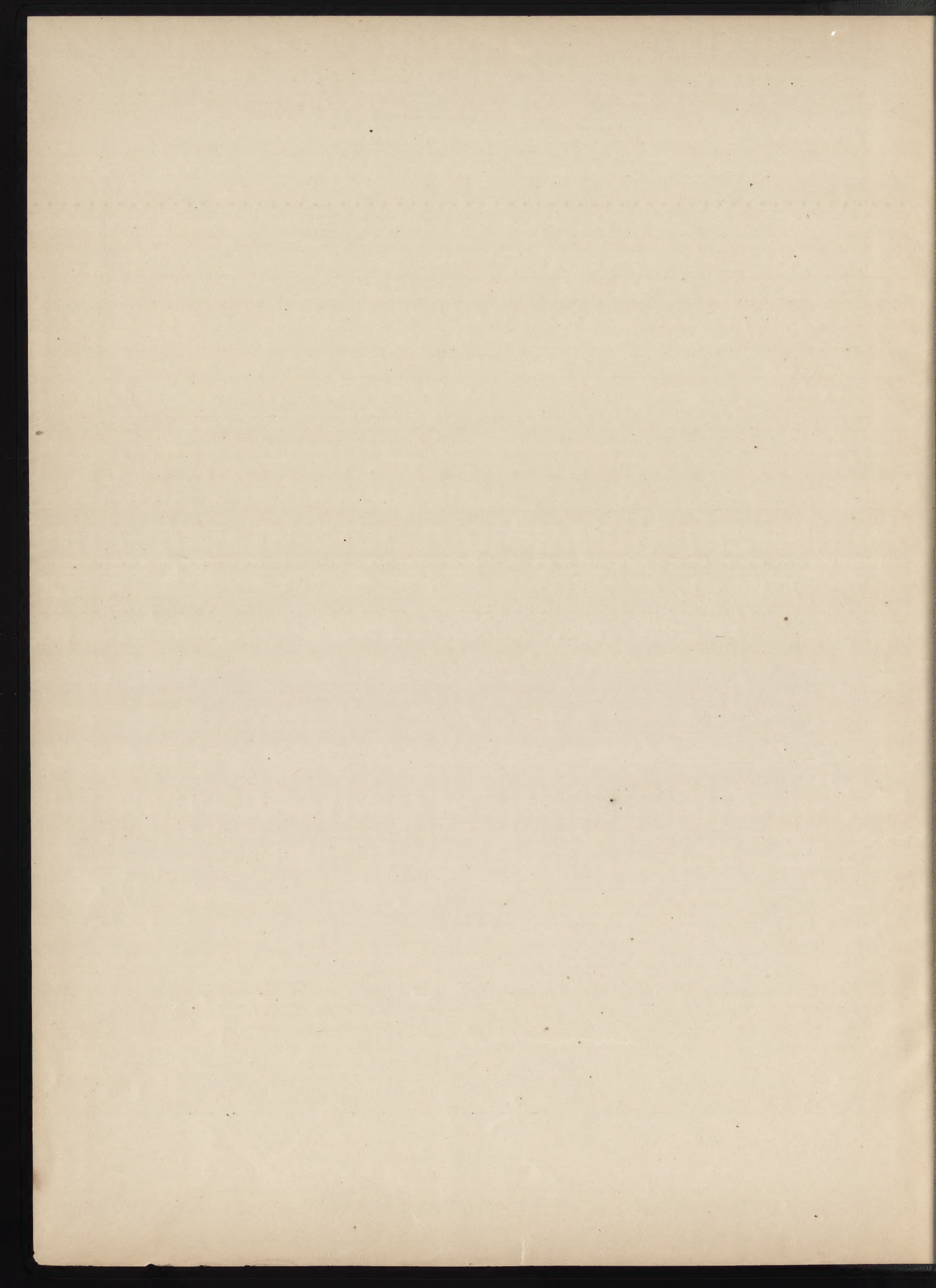
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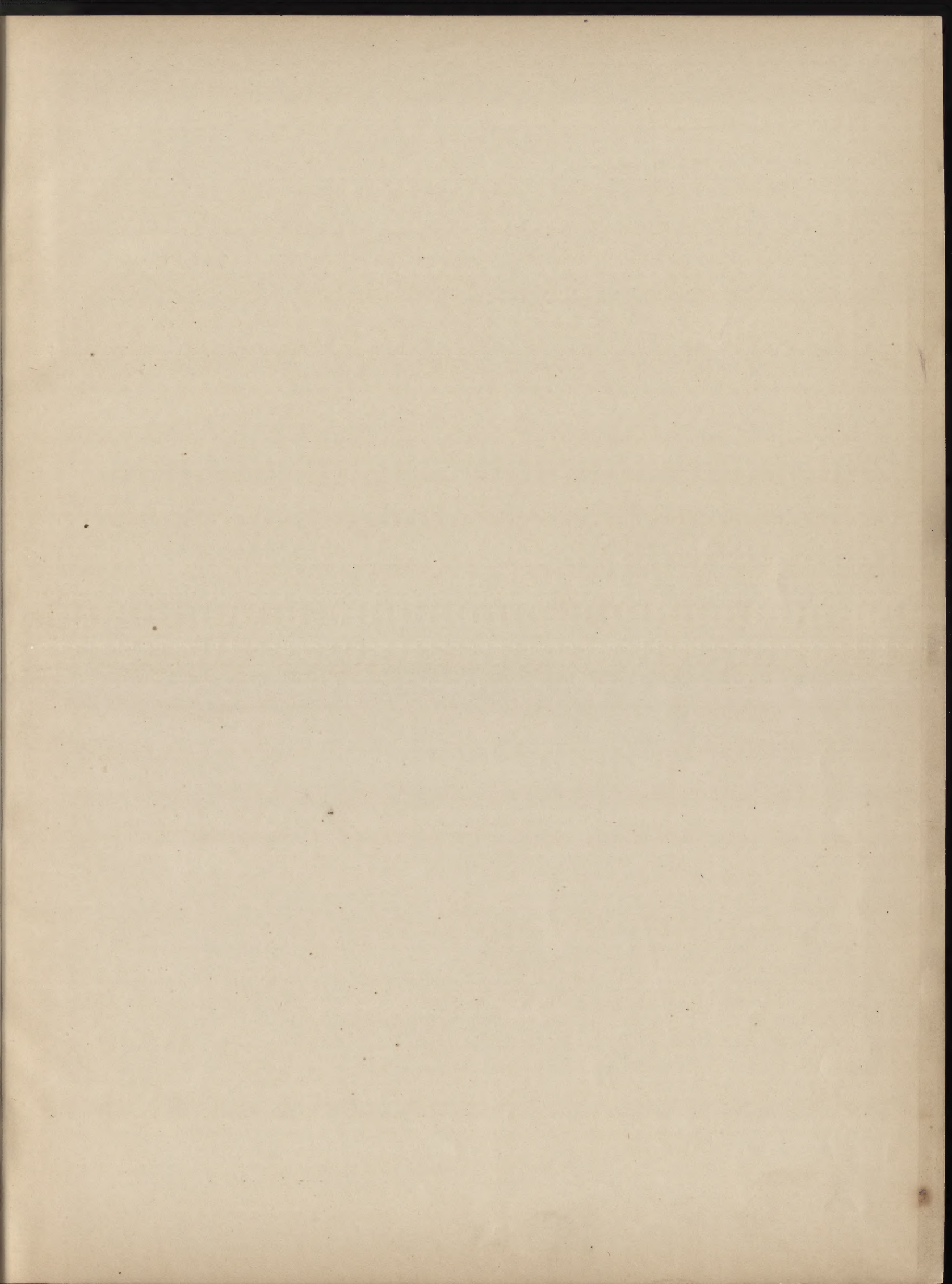


















HINTS

ON

# HORSE-SHOEING:

BEING

AN EXPOSITION OF THE DUNBAR SYSTEM, TAUGHT TO THE  
FARRIERS OF THE UNITED STATES ARMY, UNDER  
THE AUTHORITY OF THE JOINT RESOLU-  
TION OF CONGRESS OF JULY 28, 1866.

PREPARED BY

JOHN KIERNAN,

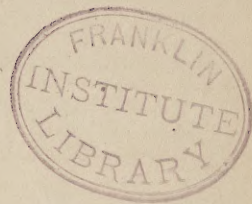
CHIEF FARRIER OF THE CAVALRY DEPOT, CARLISLE, PA.

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APPROVED BY A BOARD OF CAVALRY OFFICERS, AND ORDERED BY THE SECRETARY OF WAR  
TO BE PRINTED FOR DISTRIBUTION TO OFFICERS OF THE MOUNTED SER-  
VICE AND TO COMPANIES OF CAVALRY AND ARTILLERY.

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★ WASHINGTON:  
GOVERNMENT PRINTING OFFICE  
1871.





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## REPORT

Of a board of officers appointed to meet at Fort Riley, Kansas, by virtue of the following orders :

[Special Orders No. 244.—Extract.]

“HEADQUARTERS DEPARTMENT OF THE MISSOURI,  
“*Fort Leavenworth, Kansas, December 29, 1870.*

“In compliance with instructions from the Adjutant General's Office, a board of officers is hereby appointed to meet at Fort Riley, Kansas, on Wednesday, the 4th of January, 1871, for the purpose of examining the manuscript of a work entitled ‘Hints on Horse-shoeing,’ by John Kiernan, farrier, with accompanying plates, papers, &c.

“DETAIL FOR THE BOARD.—Captain William M. Graham, First Artillery; Captain Henry C. Hasbrouck, Fourth Artillery.

\* \* \* \* \*

“The report of the board will be forwarded to these headquarters.

\* \* \* \* \*

“By command of Brigadier General Pope :

“W. G. MITCHELL,

“*Brevet Colonel United States Army, A. A. A. General.*

“Official :

“W. M. DUNN, JR.,

“*Brevet Major United States Army, A. D. C.*”

[Special Orders No. 5.—Extract.]

“HEADQUARTERS DEPARTMENT OF THE MISSOURI,  
“*Fort Leavenworth, Kansas, January 9, 1871.*

\* \* \* \* \*

“First Lieutenant Thomas Ward, First Artillery, is hereby detailed as a member of the board of officers appointed by Special Orders No. 244, series of 1870, from these headquarters.

\* \* \* \* \*

“By command of Brigadier General Pope :

“W. G. MITCHELL,

“*Brevet Colonel United States Army, A. A. A. General.*

“Official :

“W. M. DUNN, JR.,

“*Brevet Major and A. D. C.*”

The board met, pursuant to the above orders, at Fort Riley, Kansas, January 11, 1871, and proceeded to examine the manuscript entitled “Hints on Horse-shoeing,” by John Kiernan, chief farrier and instructor of horse-shoeing at the cavalry depot, together with plates, testimonials, and accompanying papers.

After a careful examination and discussion of the work, the board decided to adjourn for the purpose of testing the method, not only of paring the foot and fitting the shoe, but for the treatment of several diseases common to the horse's foot, and for this purpose selected several horses with diseased feet, treating them as recommended.

Each member of the board carefully witnessed the practical application of the method of paring



the foot, fitting the shoe, and the treatment recommended for several of the diseases referred to, viz: Interference, contraction, quarter-crack.

The treatment laid down was applied to a horse that interfered so badly that he always cut himself if driven without a boot, and the result was entirely successful.

Although sufficient time has not yet elapsed to produce a permanent cure of the two latter diseases now under treatment, still the improvement is so great as to fully convince the board that the treatment will, in proper time, produce the desired result.

Specimens were forwarded by Colonel Edward Hatch, Ninth Cavalry, from St. Louis Arsenal, February 8, 1871, at the request of John Kiernan, farrier, and laid before the board. The first shows the manner of paring and shoeing the foot by the system under consideration; and the second gives the old style of preparing the foot for the shoe, leaving the bars to connect with the heels. The former shows a healthy, well-developed foot; the latter, a diseased and contracted one, evidently produced by leaving the bars to connect with the heels, which encases the frog in a wall, inviting instead of preventing contraction, and by cutting away the sides of the frog, which removes what nature intended as a protection to the interior structure of the foot.

The board, after a careful study, both theoretically and practically, of the system advanced by Mr. Kiernan, are of the belief that it offers great advantages in the treatment of the foot for diseases common thereto, and the preparation of the foot for the shoe, as well as a great many improvements in the form of the shoe itself, and the board would therefore recommend that this system be adopted throughout the Army.

The board urgently recommend that, if the work is adopted and published, it be accompanied by the plates, engraved in the best style, believing them to be of vital importance to the farrier to enable him to understand correctly the rules laid down by the author.

W. M. GRAHAM,  
*Captain First Artillery, Presiding Officer.*  
H. C. HASBROUCK,  
*Captain Fourth Artillery.*  
THOS. WARD,  
*First Lieutenant First Artillery, Recorder.*

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The following named officers have certified to the author's skill in the application of the Dunbar system:

Brevet Major General EDWARD HATCH, colonel Ninth Cavalry.  
Brevet Brigadier General GEORGE A. H. BLAKE, colonel First Cavalry.  
Brevet Brigadier General JOHN P. HATCH, major Fourth Cavalry.  
Brevet Lieutenant Colonel H. A. DU PONT, captain Fifth Artillery.  
Brevet Lieutenant Colonel THOMAS B. HUNT, assistant quartermaster.  
Brevet Lieutenant Colonel WARREN WEBSTER, surgeon United States Army.  
Brevet Major C. MAUCK, captain Fourth Cavalry.  
Captain DEANE MONAHAN, Third Cavalry.  
Brevet Captain C. S. ROBERTS, aid-de-camp.  
Lieutenant JOHN M. WALTON, Fourth Cavalry.  
Lieutenant FRANK W. RUSSELL, Sixth Cavalry.  
Lieutenant J. L. RATHBONE, aid-de-camp.





## KIERNAN'S HINTS ON HORSE-SHOEING.

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The author of this little work, after an experience as a practical farrier and horse-shoer of twelve years, while traveling on the frontiers, observed a great want of professional farriers and practical blacksmiths, particularly where there were cavalry and artillery regiments stationed. His system of shoeing horses and treating certain diseases hereinafter mentioned, is, by the aid of the illustrations, easily understood in these few hints placed within reach of all who are interested in that noblest of animals, the horse.

In addition to the instructions for paring the foot and fitting the shoe, the following diseases common to the horse's foot are briefly referred to and treatment recommended: "Long feet," "corns," "contraction," "quarter and toe cracks," "thrush," "pumice foot," "hoof-bound," "enlargement of the metacarpal bone," "sprain of the back tendons," "interfering."

### INSTRUCTIONS FOR FITTING AND DRIVING THE SHOE.

The first thing to be done is to carefully examine the horse's feet all around, to see that they are of a natural shape, taking care to abstain from any action that will tend to excite the horse.

The shoes should be removed one at a time, and the nails carefully drawn after the clinches are cut, one at a time, and anything like tearing off the shoe by main force should, by all means, be avoided.

The shoe being removed, the rasp should then be used on the edge of the foot where the shoe has been, removing all dirt and gravel which may have accumulated there, and thus prevent injury to the shoeing-knife.

If the foot is healthy and of a natural shape, and has been shod regularly, no alteration is required, but simply to pare out the sole of the foot, removing the bars entirely and opening out the heels back. The surface of the frog should be trimmed off a very little, but the sides should never be cut.

By reference to plate No. 12, "Natural," an exact idea of the system of paring the foot recommended by the author may be gained. It has been practiced successfully, and is recommended for the simple reason that, by the system of removing the bars and opening out the heels, contraction is prevented, and the frog retains its natural shape, because all pressure is removed from each side.

The foot should not be scooped out so as to leave the wall projecting without any support; for the wall of the hoof is the base upon which the horse travels, and this should be supported by a sufficiency of the sole as a "ground surface." The shoes should be removed and the feet prepared one at a time.

In fitting a shoe to the foot after it has been thoroughly prepared, the farrier should take hold of the foot with both hands and see that the shoe is perfectly easy on the heels, and that he has sufficient room all around, in the manner illustrated on Plate No. 11. If the shoe is found to fit well everywhere, he will take the foot between his knees, and placing the shoe properly, drive the nails with great care, so that the shoe cannot get out of its proper place. When the nails are started he should hammer them home lightly, or according to the foot he is working on. The three nails on the inside and outside, toward the toe, should always be driven a little tighter than the heel nails, so as to prevent pressure on the heels. No man should be in a hurry in shoeing a horse, but should always be careful in fitting and driving the shoe, as instructed.

A shoe should never be fitted tightly, unless the coffin-bone has too much play; then it should be fitted tight around the toe and each quarter, as far as the nail-holes extend back, in order to contract the foot and bring the coffin-bone to its proper place. Such cases are, however, very rare.



The heels of the shoe should never be allowed to curve inward toward the frog, and the foot should be prepared so as to prevent any pressure from the shoe on the heel, in the manner shown by Plate No. 14, at the same time allowing the bearing of the shoe to be perfectly equal.

If the horse has a long foot it should be shortened on the toe as much as possible—the more the better, for the hoof grows out more quickly at the toe—and it is necessary, because in a case of this kind the coffin-bone is necessarily out of its proper position, and the operation of shortening the toe must be continued until it resumes its natural shape; but a close operation and working the horse at the same time is not recommended, because the foot can be brought to its proper shape, by cutting gradually, in time.

After the cutting has been performed a shoe should be fitted so as to have the pressure on each quarter, and with heels if the horse's heels are naturally low, in order to prevent a sudden change. A horse should be reshod at least once a month.

The plates numbered from 1 to 10 are explained by remarks, and referred to in explaining the treatment of different diseases mentioned herein.

PLATE No. 1.—CLINCHING-TONGS—To be substituted for the hammer in clinching nails after they are driven—recommended because all the evil effects of pounding on the wall of the hoof to fasten the nails are avoided. It is described as follows, (See Plate No. 1:) "A" is the jaw which presses against the nail after it is driven; "B" presses down and clinches the point by pressing together the handles marked "C" and "D."

PLATE No. 2.—Shows the manner in which the shoeing-knife should be held. "A," holding the knife in one hand in paring each side of the frog and in cutting away the bars and trimming out the heels; "B," using both hands in cutting the hard sole and wall of the foot.

PLATE No. 3.—PARING OUT THE FOOT.—By reference to this plate it will be seen what a difference there exists between the system recommended and practiced by the author and the old style practiced and recommended by all authorities on the subject heretofore.

The bars should be *cut away entirely*, removing the pressure from the frog, and cutting out the heel. By this system of paring the foot a ground surface will always be left. Commencing at the heel and expanding gradually, as illustrated by the plate "A" to "C," the sides of the frog should never be cut, but the top should be cut down sufficiently to allow it to be clear of the ground after the shoe is fitted. The cleft of the frog should always be cleaned out thoroughly every time the shoe is renewed.

PLATES Nos. 4 and 5.—LONG FEET BEFORE AND AFTER CUTTING.—A horse with a long foot, as will be easily seen, will suffer from an undue pressure on the heels, (see article "*Corns*,") causing corns, and in addition to that, if the foot is not shortened in time, it will cause the coffin-bone to lose its proper shape, but this can be remedied by shortening the toe every time the horse is shod, thus keeping the foot in its proper shape.

PLATE No. 6.—Plain shoe for a weak foot, or a foot that has been under treatment for any disease. It is a heavy and wide shoe, and is recommended as protecting the sole of the foot.

PLATE No. 7.—BAR-SHOE.—Recommended for removing pressure entirely from the heels in cases of quarter-cracks, corns, or weak heels.

PLATE No. 8.—Represents a shoe made specially to prevent interfering. No nails to be driven on the inner quarter. The common practice of fitting a shoe tight on the heel to prevent interfering is entirely wrong. An interfering horse does not strike with his heel, but with the inner side of the toe not further back than the heel-nails, both hind and forward. To prevent this, the shoe should be fitted wider on the *inner* than on the *outer* heel.

A horse that interferes should be carefully examined by the farrier before shoeing, who will notice particularly the shape of his feet. If the animal stands *inward* and interferes, the *outside* quarter should be cut down, and thus throw the foot level; and, if he stands *outward*, and interferes, the *inside* quarter should be cut down for the same reason. After this a shoe should be fitted with no nails on the inner quarter, which should be *thickest*, as shown by the plate.

PLATE No. 9.—Represents a heavy shoe for a draught horse. It is thickest on the outer toe and heel, as will be seen by the plate, and is intended for a horse that is pigeon-toed.

To prevent a horse traveling pigeon-toed is simply to pare off the inner quarter of the toe, and have the shoe fitted as above. By this operation the bearing will be level. This will apply also to



a horse for light riding, and for a horse traveling between the shafts; but for the latter a good block-heel on the outer and a small one on the inner quarter of the shoe should be made; the toe also to be made thick in proportion, to make the bearing level.

PLATE No. 10—Is a representation of a perfectly healthy coffin-bone, with the upper and lower pastern and navicular bones, front and reverse sides. The system recommended by the author is intended to prevent any pressure whatever on the wings of the coffin-bone. Anything that prevents the perfectly free action of the coffin-bone will cause "navicular disease," and "ossified cartilages." After a foot is pared, as recommended in this, so as to be easily expanded, the wings of the coffin-bone, which are the widest part, should be protected by a wide shoe, and there should be no pressure whatever on the heels.

### CORNS.

The pressure of the bar on one side of the seat of the disease, and of the horny substance of a contracted heel on the other side, added to a tight shoe, causes inflammation, which, when become chronic, is styled a *corn*.

A corn may be detected by paring the foot close. It is not necessary, as recommended by some authorities, to use a pair of pincers, squeezing the hoof all around to find the corn, thereby giving the horse unnecessary pain. They are to be found only in the heel, and do not result from bruises, but from pressure.

TREATMENT.—The shoe having been removed, the inside of the hoof should be pared out thoroughly all around, and if a long hoof, it should be shortened. If the corn is visible, the heel should be pared down and the bars weakened, opening the heel as far back as possible, (see Plate No. 11,) and fitting an open shoe so as to throw the pressure off the heel. The pressure having been removed, the corn will disappear or grow down in the quarter, in which case the farrier should fit a bar-shoe so as to throw the weight off the diseased heel and partly on the frog, the elastic surface of which will prevent severe pressure.

If a horse has a long foot, the pressure is more on the corns, because his foot is in front of him, and an over proportion of his weight comes on the heels. A horse with a long foot is like a man with a thick sole to his boot and no heels, for the heel strikes the ground first.

Every horse should have his feet well *under* him, and not in *front* of him. This fact should be taken into consideration when fitting the open shoe.

Inflammation should be reduced by placing a swab over the cornet and using a hot poultice of linseed meal for the foot.

The pressure having been removed from a corn for a fortnight, it will be observed to have a light color, representing the color of a new corn, and if properly treated it will gradually disappear and be displaced by a healthy growth of foot.

The horse should be allowed at least a month in which to recover from his lameness; but it is not necessary to turn him out to grass, and care should be taken that his feet are closely attended to, having the shoes renewed about once in a fortnight.

### CONTRACTION

Is the result of neglect, want of natural moisture, and tight shoeing. The result is lameness, if in one foot, and if in both feet, the loss of their free, natural use, causing short steps and stumbling. If the inner quarter is contracted it is the cause, if not soon remedied, of quarter-crack. The practice of fitting a shoe so as to fit tighter on the inner than the outer quarter, to prevent interfering, renders it more liable to contraction.

The want of proper moisture causes the horn to shrink, and prevents the foot from expanding naturally. This should be remedied by soaking the feet, if feverish, in warm, and if healthy, in cold water twice a day and an hour each time. This moisture should be applied at least two hours before the horse is to be used. This will render the foot elastic and prevent abuse from traveling over rough roads.

By reference to accompanying plate, No. 12, the difference will be observed between a natural and a contracted foot. The quarters growing toward each other in the contracted foot cause the



coffin-bone to lose its proper shape, and forcing the sensitive frog upward from its proper place, causes scratches and thrush.

TREATMENT OF CONTRACTION, briefly speaking, is *expansion*. The foot should be thoroughly prepared in the following manner: If the horse is lame, the farrier should shorten the toe, lower the foot all around, and open the heels back until blood is drawn. The sole of the foot should be pared as closely as possible on each side of the frog, in the manner shown by the illustration on Plate No. 12, "Natural foot." The frog should be lowered, but the side should *not* be cut. A groove should be made with a rasp just under and parallel with the cornet, on each side, (see Plate No. 14,) deep enough to draw blood; then, with a fine shoeing-knife, cut little notches down from the cornet, and across the groove at certain equal distances—as shown by illustration No. 14—the entire length of the groove. These notches should also be deep enough to draw blood. This will relieve the pressure caused by contraction from the cartilages on both sides, and allow them to resume their proper shape.

Having the foot ready for the shoe, a hand should be placed on each side of the foot, pressing it outward, in the manner shown by Plate No. 15. The shoe must be very carefully fitted, and must have eight nail-holes, for the reason that it is the *heel-nails* that relieve a horse while in contraction.

The shoe should be fitted so as to project at least a quarter of an inch on each side of the foot—so as to see the nail holes projecting on each side of the outer and inner quarter. Having this accomplished, the *bearing should be equal*; the nails must be driven first toward the toe, then toward the heel, driving them half way, and using the utmost care and skill; the higher the nails are driven the better. The shoe being fitted so wide, there is no fear of pricking.

The nails toward the heel should be driven by alternate taps on each side, because the foot expands on each side, on account of being pared so thin on either side of the frog, the source of the expansion.

The heel-nails should relieve the wings of the coffin-bone, which suffer most while in a state of contraction, and allow them to come back to their proper position.

Considerable soreness will result from this mode of treatment, which can be remedied by using thin poultices of linseed meal, applied as hot as possible, to be renewed at least once every two days for the period of two weeks. The foot should also be thoroughly soaked in a bucket of warm water for half an hour at each renewal of the poultice; this will remove all soreness and prevent the foot from shrinking when exposed to the weather. The *expansion* treatment should be continued gradually until the coffin-bone resumes its natural shape; when this is accomplished, the growing hoof will naturally accommodate itself to the bone.

The severe treatment recommended is necessary only in an aggravated case causing lameness. It can be so modified by cutting the hoof and expanding the foot gradually as to allow the horse to be used while under treatment, if he has not been disabled.

#### QUARTER AND TOE CRACKS.

Quarter-cracks are commonly found in the feet of saddle-horses, and are caused by contraction and pressure, and are also the result of a shoe being fitted tightly on the inner quarter, to prevent interfering, as stated in remarks on "contraction."

Most commonly found on the inner quarter, it commences at the cornet, extending downward, and when it extends through to the laminæ, causes lameness, and is especially serious if the foot is contracted, as shown by Plate No. 16.

There are two kinds of quarter-cracks, as shown by Plates Nos. 17 and 18, the *lateral* and the *straight*, the latter being the most serious, if the separation commences at the cornet.

TREATMENT.—If the foot is inclined to contract, it should be prepared as if for contraction; shorten the toe and expand the foot, under the directions already given. If lameness has resulted, a bar-shoe should be fitted so as to remove all pressure from half an inch on each side of the crack. Then with a rasp cut a groove under and parallel with the cornet, extending about half an inch on each side of the crack; with a shoeing-knife cut some small notches on each side of the groove, after which the edges of the crack may be cut away. (See Plates Nos. 17 and 18.) If the foot bleeds freely, so much the better. After this is done, a firing-iron should be applied so as to cau-



terize the crack. This operation having been performed, the foot should be dressed with tar every morning for about three weeks. The pressure being removed, the new growth will commence at the cornet and extend downward, as shown in Plate No. 19, until a permanent cure is effected.

#### TOE-CRACK,

More common to heavy and draught horses, is caused by want of room. The space inside the wall of the foot not being large enough to accommodate the laminae, it causes inflammation and breaks out at the weakest point, which is the cornet, and extends downward to the toe, causing the foot to assume the appearance of a cloven foot. (See Plate No. 20.)

**TREATMENT.**—Shorten the toe as much as possible, and then pare the sole of the foot until it will yield to the pressure of the thumb. No pressure should be allowed within half an inch on each side of the crack on the toe, for the reason that the pressure on the toe prevents the cornet from uniting. Having prepared the sole of the foot, a fine shoeing-knife should be used to remove the horn that is inclined to grow inward on each side of the crack, after which a groove under the cornet, extending on each side of the crack, will be made, and the notches on each side of the groove, as already directed. A firing-iron should be applied to cauterize the crack from the cornet downward. Then the crack should be cut away in the center, so as to allow the use of an "expansion-plate," as shown by Plate No. 21. This expansion-plate is the invention of the writer, and can be made of brass or steel. It is composed of four pieces, as follows: A plate divided in the center into two equal parts, A and B, (see Plate No. 21,) and a thread cut in the center. Each part is made so as to fit dovetailed into the crack, held in place with a screw C, and a burr D underneath, to prevent the screw from pressing the laminae of the foot. The screw, which has considerable power as a lever, forces the two plates apart, lifts up the wall of the foot, which is pressing each side of the crack, and presses it outward. This being done, an open shoe should be fitted, wider than the foot, so as to expand it, which, together with the notches cut in groove under the cornet, will cause a new and strong growth from each side of the crack, commencing at the cornet and extending downward.

The length of time required to effect a removal of the crack depends on the treatment and skill of the operator. If the foot is expanded by the plate with skill, and the nails in the shoe driven so as to prevent the wall of the foot closing in on the crack, the plate may be removed at once; otherwise, it should remain stationary, which can be done by substituting the small screw E, which will not prevent the horse from being used while under treatment. The use of the expansion-plate is not necessary unless the crack extends the whole length of the hoof. The crack extending from the cornet partly down the front of the foot, should be treated at once, removing pressure by shortening the toe and expanding the foot as already instructed, then, by means of the groove and notches, promote a new growth at the cornet.

#### THRUSH

Is a disease of the frog, most common to a foot which is hoof-bound or contracted, but all horses' feet are subject to it when they are neglected. The frog pressed on each side by the bars of the foot and from the overgrowth of the hoof becomes inflamed, and the result is *thrush*. (See Plate No. 22.)

**TREATMENT IF THE FOOT IS HOOF-BOUND.**—The farrier, after removing the shoe, should use his rasp and lower the wall of the foot all around from heel to heel; then by the free use of the knife pare the foot to its natural size. Also pare around the frog until the sole of the foot yields to the pressure of the thumb, then open the heels and remove the pegs that grow on each side of the heels. All this should be done before a knife is used on the frog. After all pressure is removed by this paring operation, the condition of the frog will show how it was affected by pressure on each side.

Next, by the use of the knife, cut a slice off the top of the frog, and carefully clean out the cleft which suffers most on account of the direct pressure of the bars on each side of the frog. After this cleaning operation is performed, a warm poultice of flax-seed meal should be applied two or three times, according to the condition of the foot. When the poultice is removed the foot should



be washed out occasionally with castile soap and warm water, after which a little salt ground into fine powder should be forced into the cleft, and kept in by a mixture of tar and oakum as a dressing; after which an open shoe should be fitted so as to expand the foot gradually. This treatment should be pursued until a permanent cure is effected.

If the foot is in a state of contraction, it should be expanded, under the instructions already given. By this expansion all pressure is removed, and a permanent cure is easily effected by following the instructions already given.

No liquid remedies, such as butter of antimony or chloride of zinc, should be used, as they dry up the foot before the inflammation is removed.

By reference to Plate No. 22, a good idea may be obtained of the manner of paring out a hoof suffering from thrush.

#### PLATE No. 23.—PUMICE FOOT

Should always be pared out each side of the frog until it yields to the pressure of the thumb. This paring should, however, be done immediately around the frog, leaving more than usual of ground surface. (See plate after treatment.) The toe should be shortened as much as possible, and the heels cut out back. If the horse is lame, a bar-shoe is the best to protect the foot, with a leather sole and some tar as a moisture. The shoe should be renewed at least once a month, with a leather sole, until a cure is effected.

#### PLATE No. 24.—HOOF-BOUND.

A horse that is hoof-bound is deprived of his free action, and resembles a horse that is foundered.

**TREATMENT.**—The foot should be pared out thoroughly and on each side of the frog until it yields to the pressure of the thumb. Open the heels and remove the bars that press the frog on each side and cause the animal much pain.

The toe should be shortened, and if the foot is inclined to contraction the shoe should be fitted wider than the foot, which, if drove properly, will expand the foot. (See article *Contraction*.) The shoe should be a good, heavy, open one, well eased off the heels. Having the foot prepared, the operation should next be performed around the cornet, as follows: If the cartilages are hard, as they are generally from being pressed upward, a groove should be made with a rasp immediately under the cornet, and extending all the way across from heel to heel, deep enough to draw blood. Next, with a fine knife, cut notches across the groove at equal distances the whole length of the groove and extending from the cornet downward. By this operation, illustrated on Plate No. 24, the pressure is removed from the cartilages. After this a poultice of linseed-meal should be applied around the cornet, which loosens all pressure and starts a new growth.

If the horse is lame from this disease, the close-cutting operation should be performed and the poultice applied one week; otherwise the operation need not be so severe.

**PLATES Nos. 25, 26, 27.**—ILLUSTRATIONS OF OVERGROWTH OF HOOF AND NEGLECT BEFORE AND AFTER TREATMENT.—The illustration before treatment (No. 25) represents the ground surface of a foot operated on by the author, and "after-treatment" represents the same foot after one pound of overgrowth had been removed from one foot. Plates 26 and 27 show the difference between the foot before and after treatment, and show the importance of being careful in observing a horse's foot, so as to prevent lameness and the various diseases caused by neglect.

#### PLATES Nos. 28, 29.—ENLARGEMENT OF THE METACARPAL BONE,

In a great many cases, causes lameness, because the enlargement interferes with the free use of the flexor tendon, pressing it out of its proper place. A horse with a contracted foot suffers from this pressure when the shoe is fitted tight and brings the heels inward.

The metacarpal bones extend from the back of the knee downward to the pastern joint, forming, as it were, a brace on each side. They become quite small as they extend downward, and the enlargement is generally found on the inside of the leg. (See Plate No. 28.)

The enlargement may be discovered by running the hand downward from the knee, the thumb



on one side and the forefinger on the other, until it is felt. (See Plate No. 29, "A.") If pressed and the horse yields to the pressure, it is a sure sign that he is affected, and he should be properly shod at once, as if for contraction, or the enlargement should be removed. To do this the horse should be in the following position: First, with plenty of straw under him, to prevent bruising; then he should be thrown on his side and fastened down, so as to allow the operator to make an incision, with a fine pocket-knife, partly to the front and near where the enlargement is. This operation will not interfere with the tendons or veins that extend upward from the foot. The incision having been made, the finger may be inserted, as shown in Plate No. 29, "B," so as to raise the enlargement and make it visible. Then, with a pair of nippers, snap the end off with one motion. The incision should be closed and fastened together with a needle and silk thread; then apply a linen bandage, and over this a woollen cloth containing a little moisture, to prevent fever. A little sweet oil should be applied, to keep it clean while healing. The operation is not severe, and is thoroughly effective.

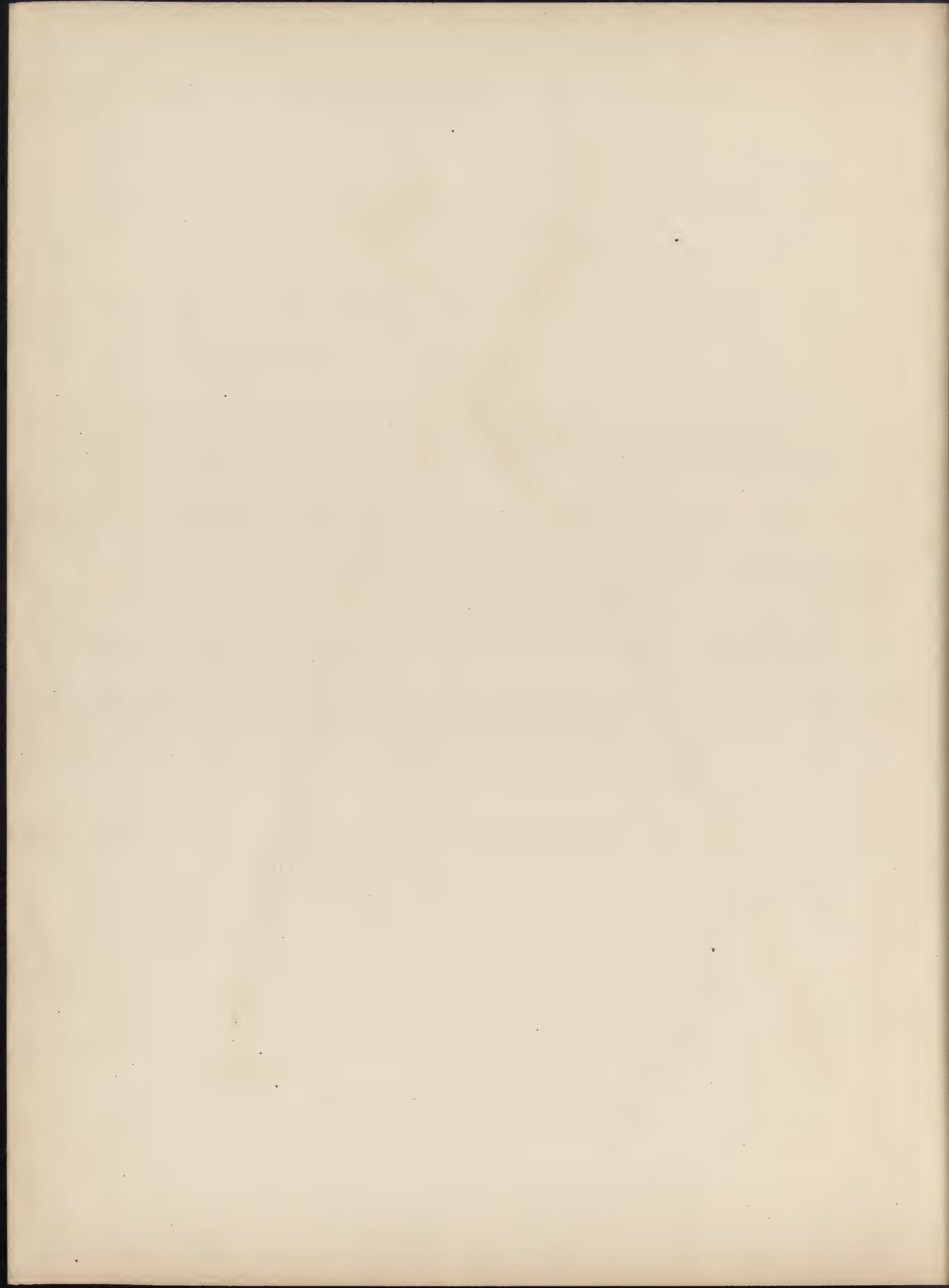
PLATES Nos. 30, 31—Represent a foot which has been deprived of the free use of the back tendons, caused by a sudden jar or misstep, causing a horse so affected to travel on his toe, and can be remedied only by a system of expanding the foot under the directions already given for contraction. After this a shoe should be fitted with a toe and no heels, for by raising the toe the bearing is thrown on the heels. If the action is heavy on the toe, the shoe should be provided with a steel toe-cork. This will prevent a horse from traveling on his toe, and such a case, if taken in time, can be remedied, if not permanently cured, by simply fitting a shoe so as to throw the bearing on the heels.

PLATES Nos. 30 and 31—Represent an aggravated case, which, from neglect, became incurable.

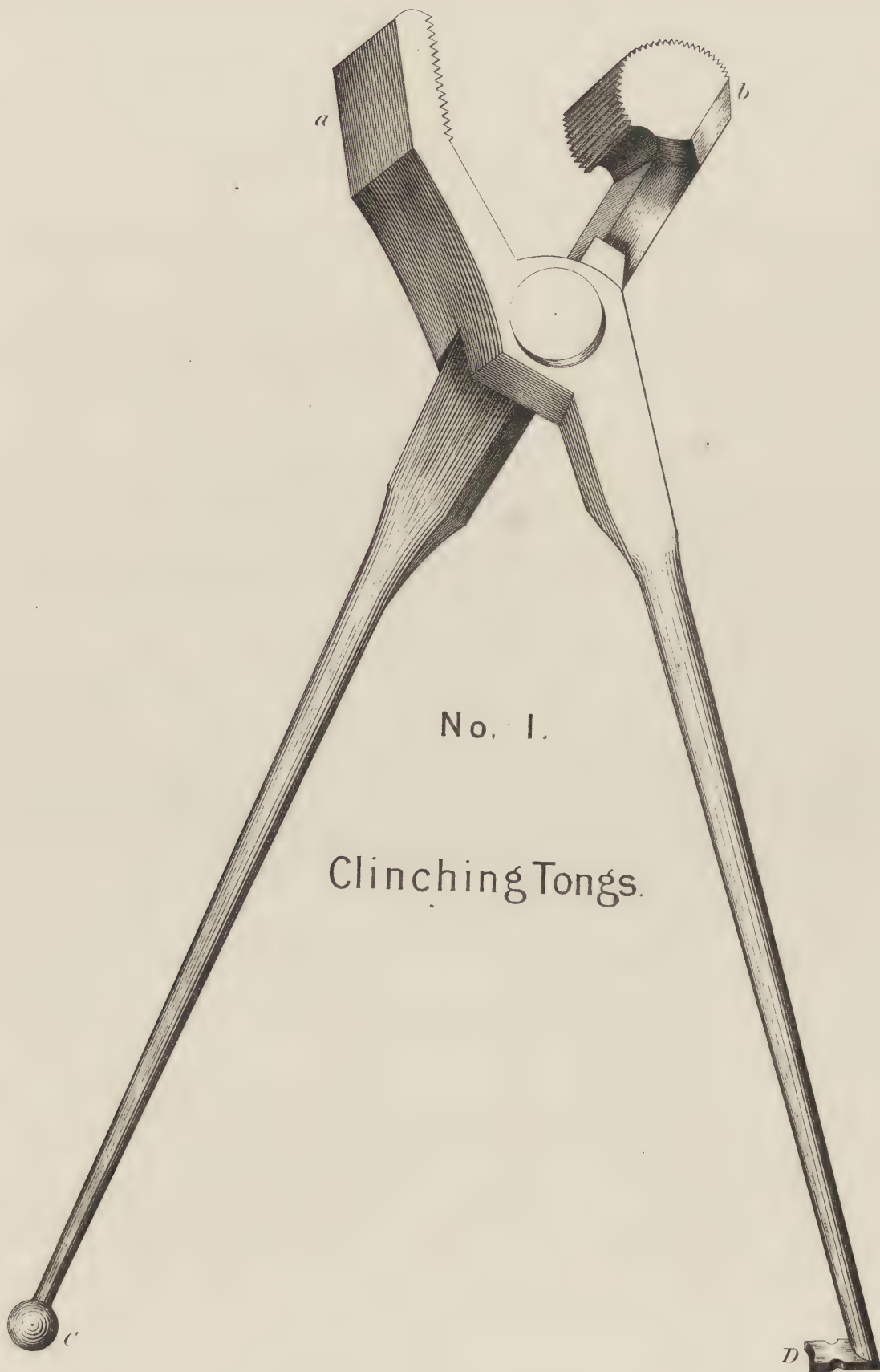
PLATE No. 32—Represents the exterior and interior surface of the sensitive frog. The great principle of this system of paring the horse's feet recommended by the author, is to remove all pressure from the frog. It should be protected from all pressure, and such diseases as thrush and scratches may be avoided.

PLATE No. 33—Gives a sectional view of all the bones and tendons of the horse's foot. Every blacksmith and farrier should thoroughly understand the anatomy of the horse's foot, in order to be able to know exactly how to treat any disease which may be brought to his notice.









No. 1.

Clinching Tongs.





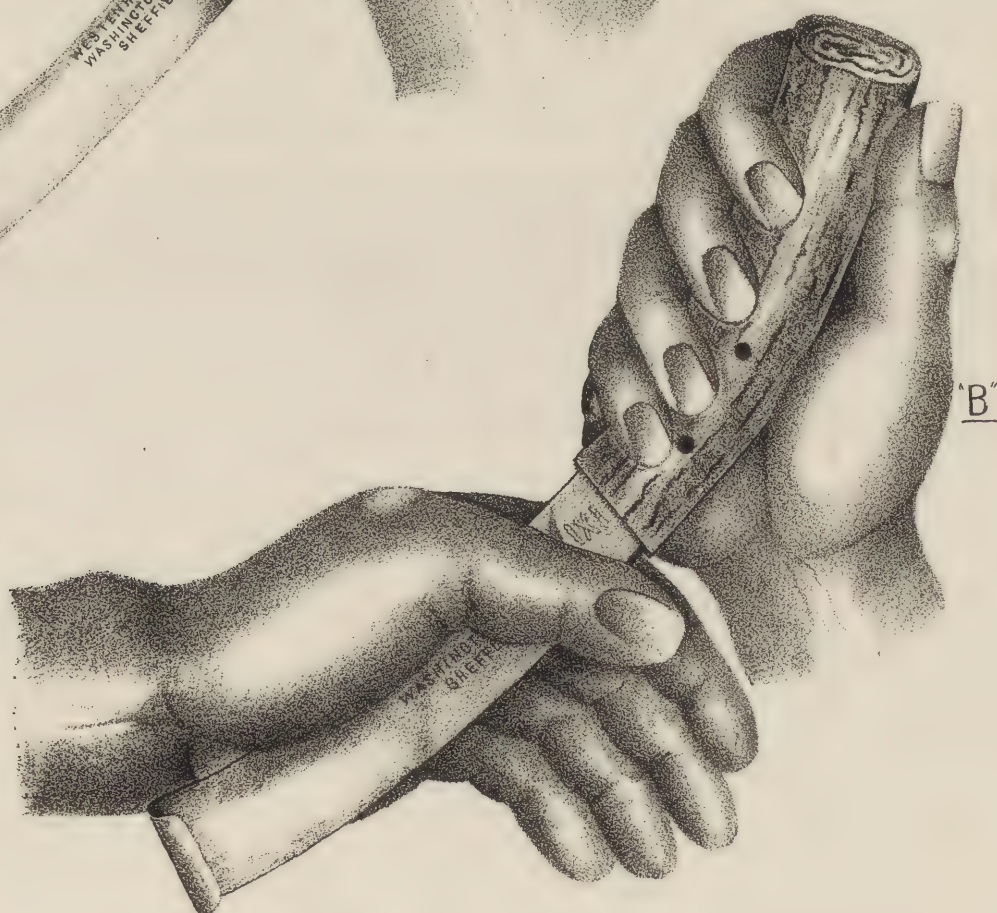






"a"

No. 2.



"B"

Correct method of holding the shoeing Knife.

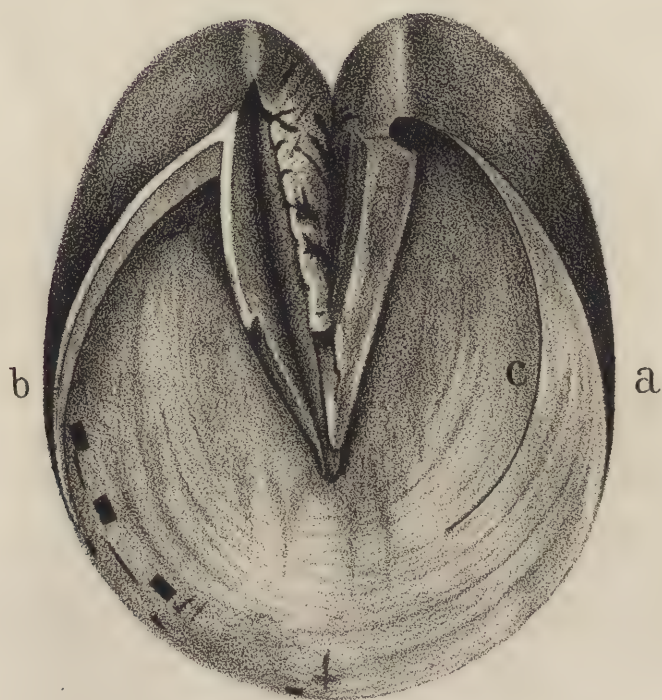








No. 3.



a new style. b old style.

Paring the foot.







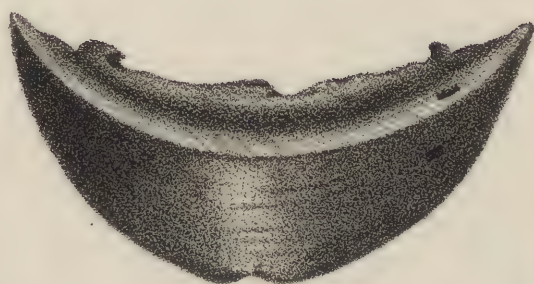
No. 4.



Long foot - before treatment.

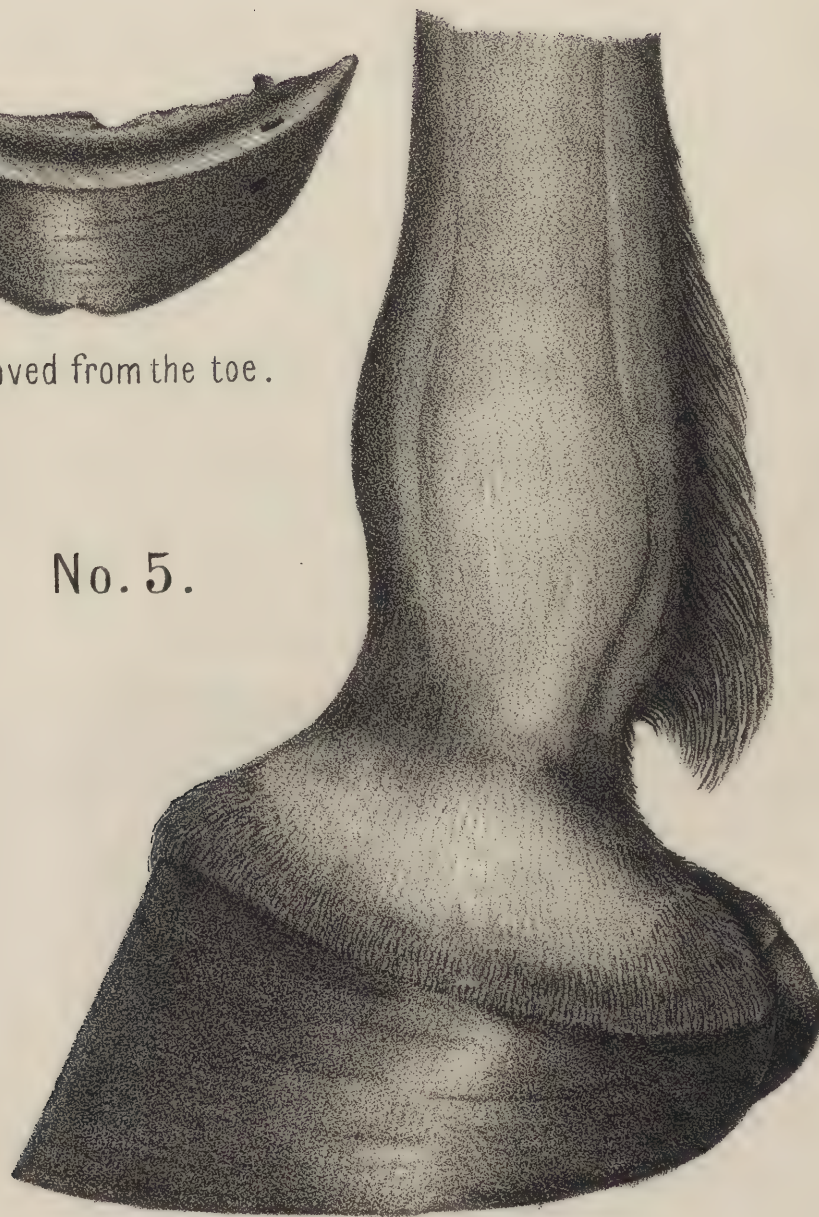






1½ inches - removed from the toe.

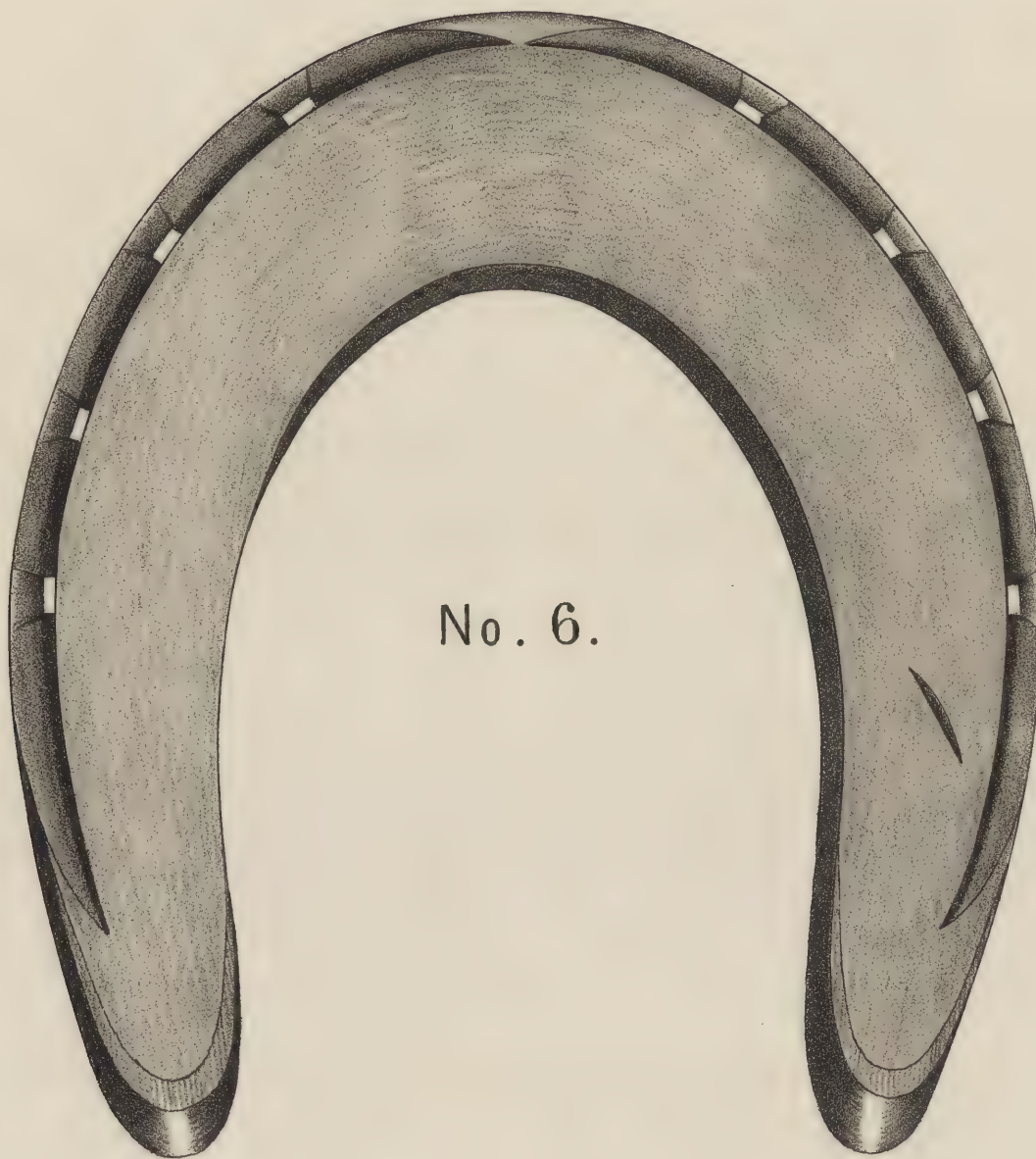
No. 5.



Long foot after treatment.







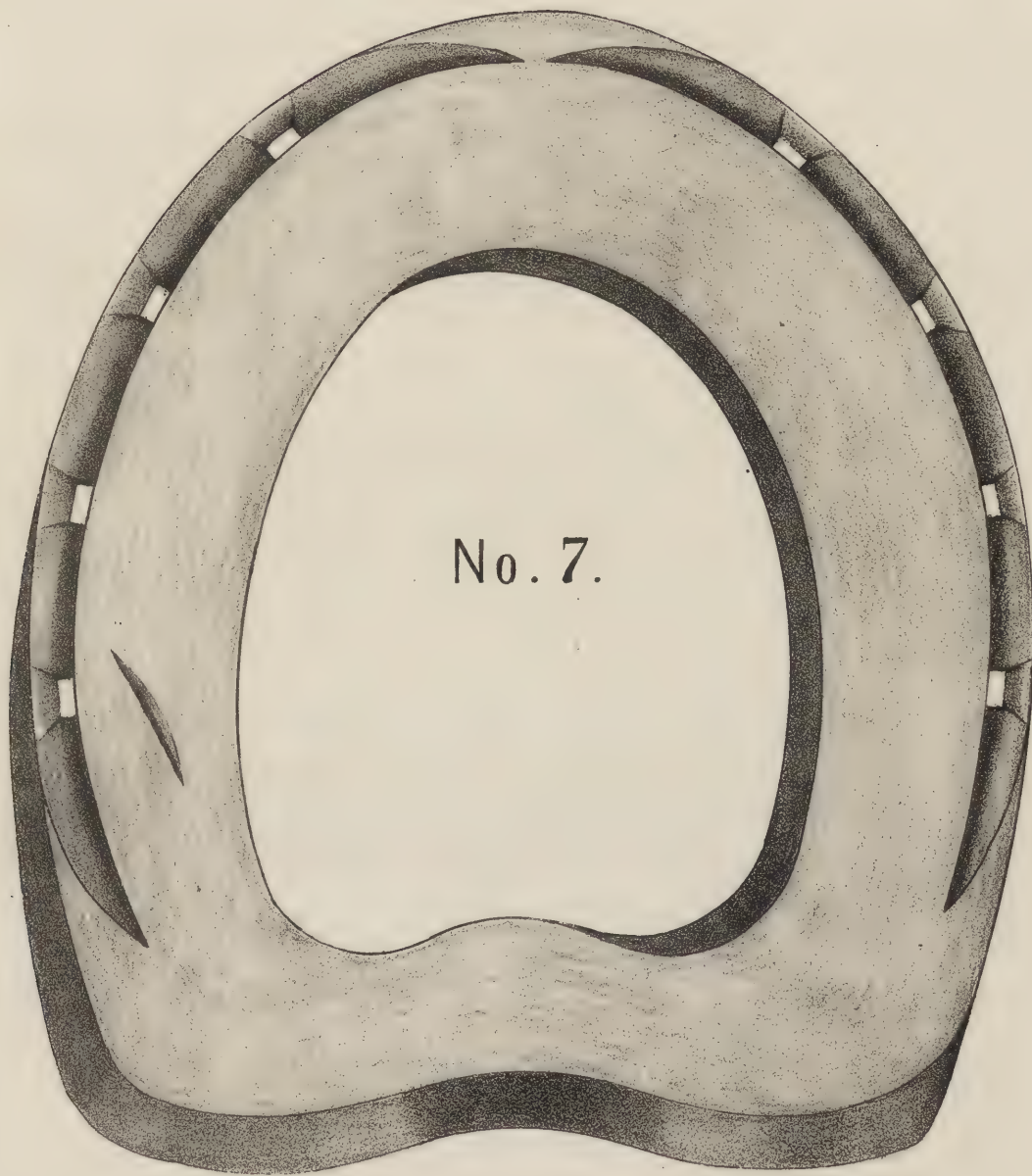
No. 6.

Plain shoe - for a weak foot.

2 1/2 inches wide at the toe.







Bar shoe for  
quarter crack - corns or weak heels.

2½ inches wide.





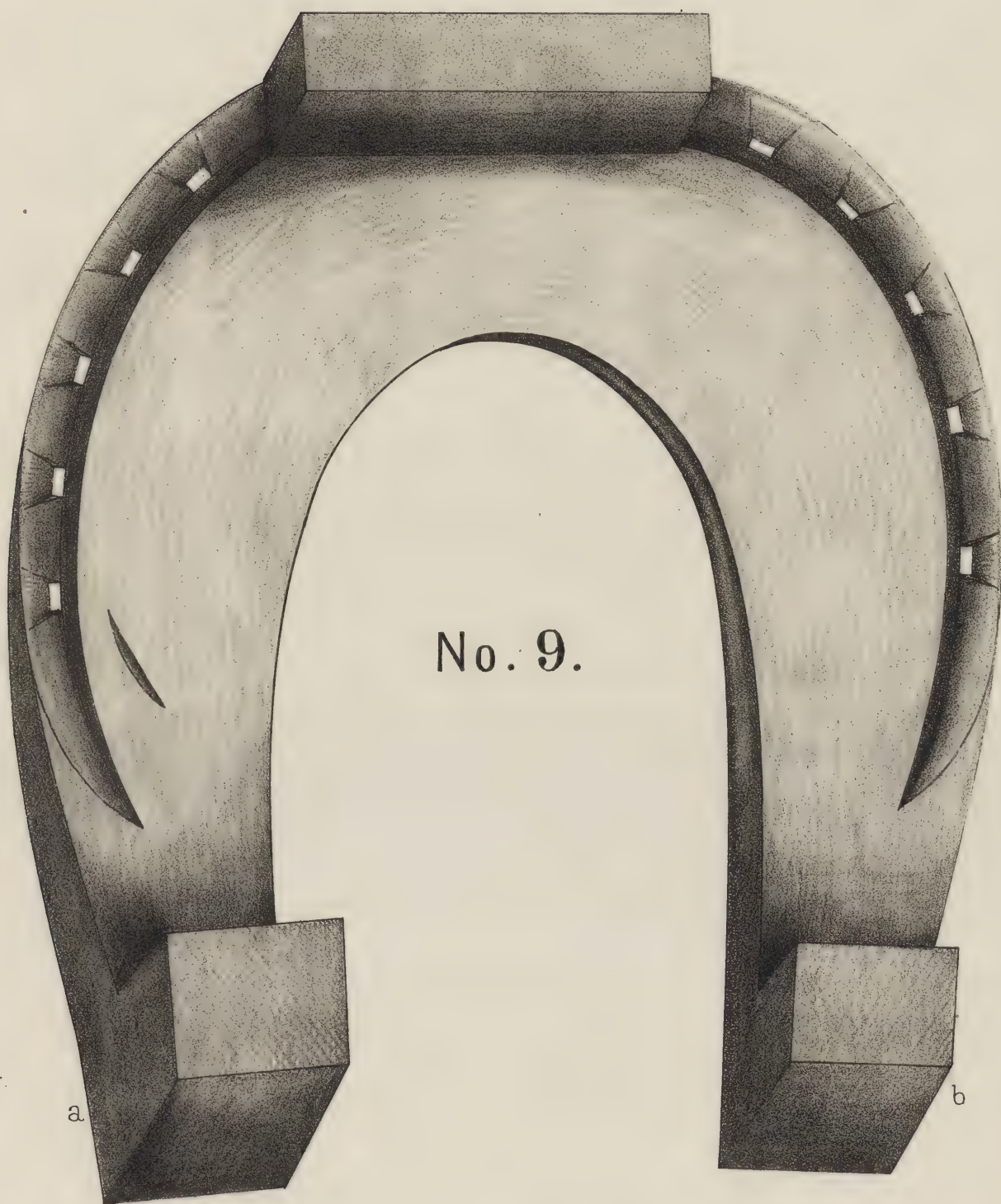


A shoe to prevent interfering.

A. outer quarter. B. inner quarter.







No. 9.

a 3 lb shoe

for a draught horse of 1500 Pds. weight.

b. inner heel. a. outer heel.





Fig. 1.

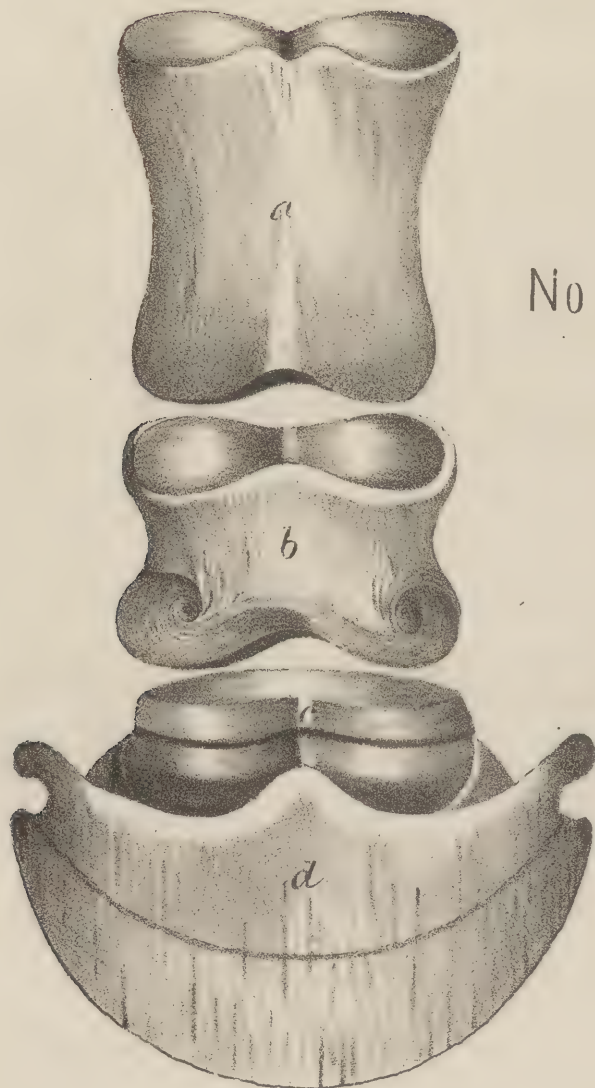


Fig. 1.

- a. Upper pastern.*
- b. Lower pastern.*
- c. Navicular-bone.*
- d. Coffin-bone.*

Coffinbone.

Fig. 2.

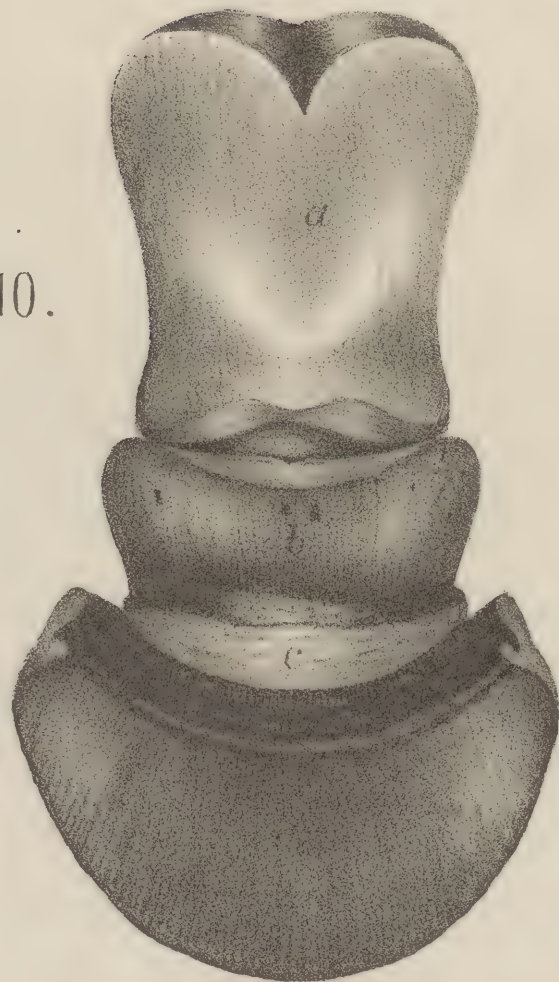


Fig. 2.

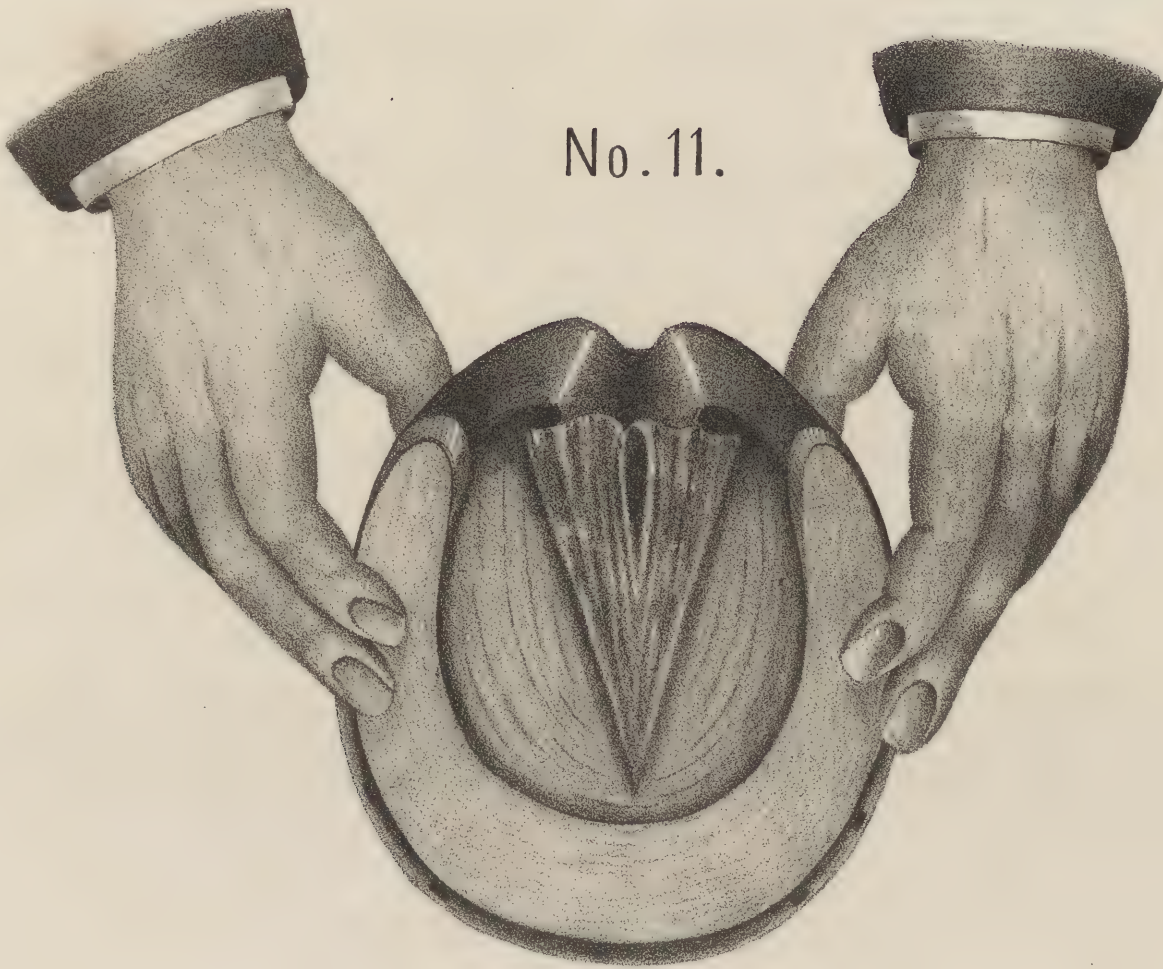
- a. Upper pastern.*
- b. Lower pastern.*
- c. Navicular-bone.*
- d. Coffin-bone, with the horny laminae.*







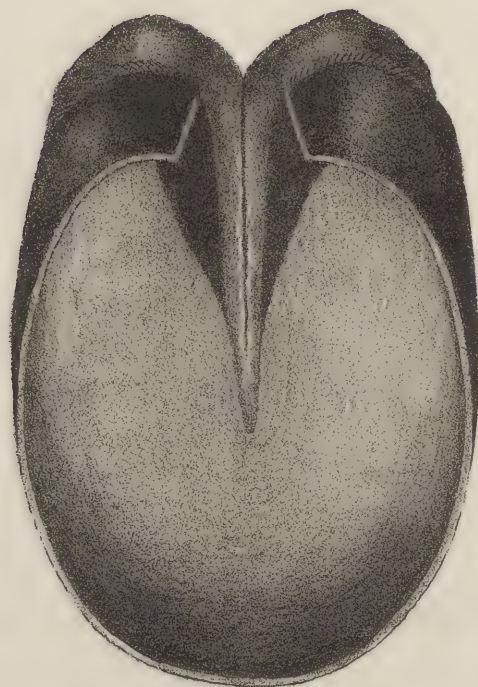
No. 11.



Fitting a shoe to remove  
pressure from the heel.







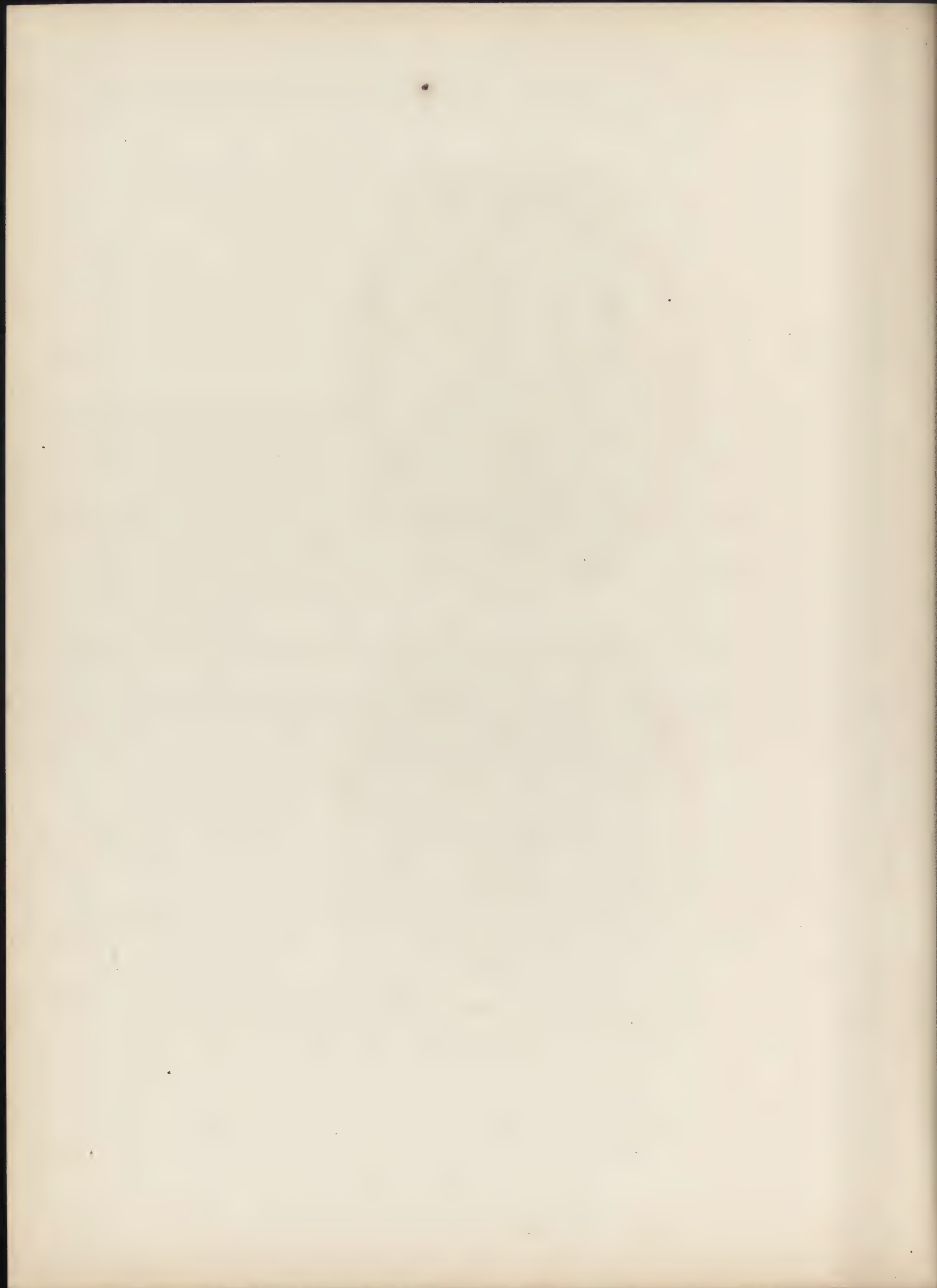
Contracted.

No. 12.



Natural.





Old style paring out the foot.



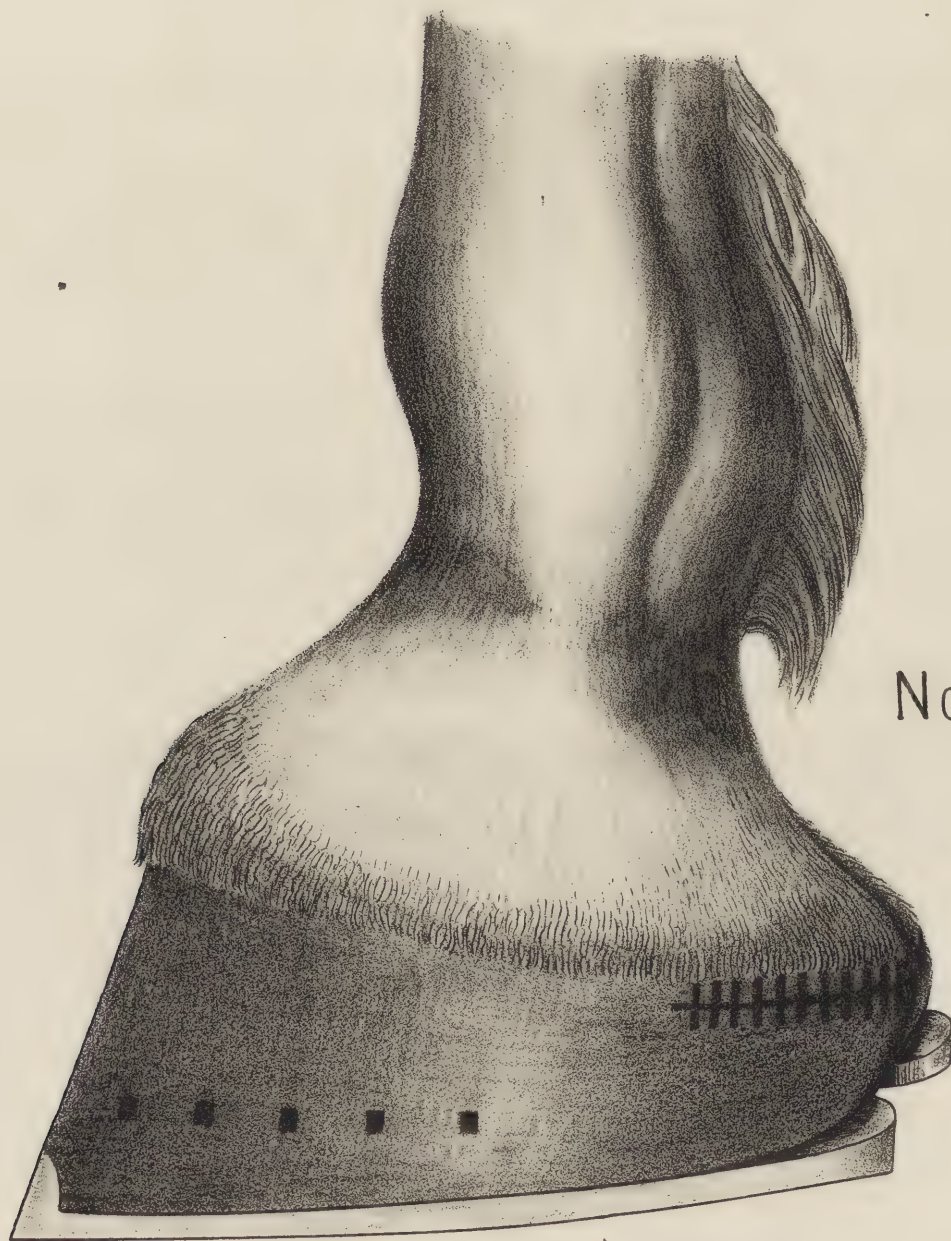
No. 13.



New style.







No. 14.

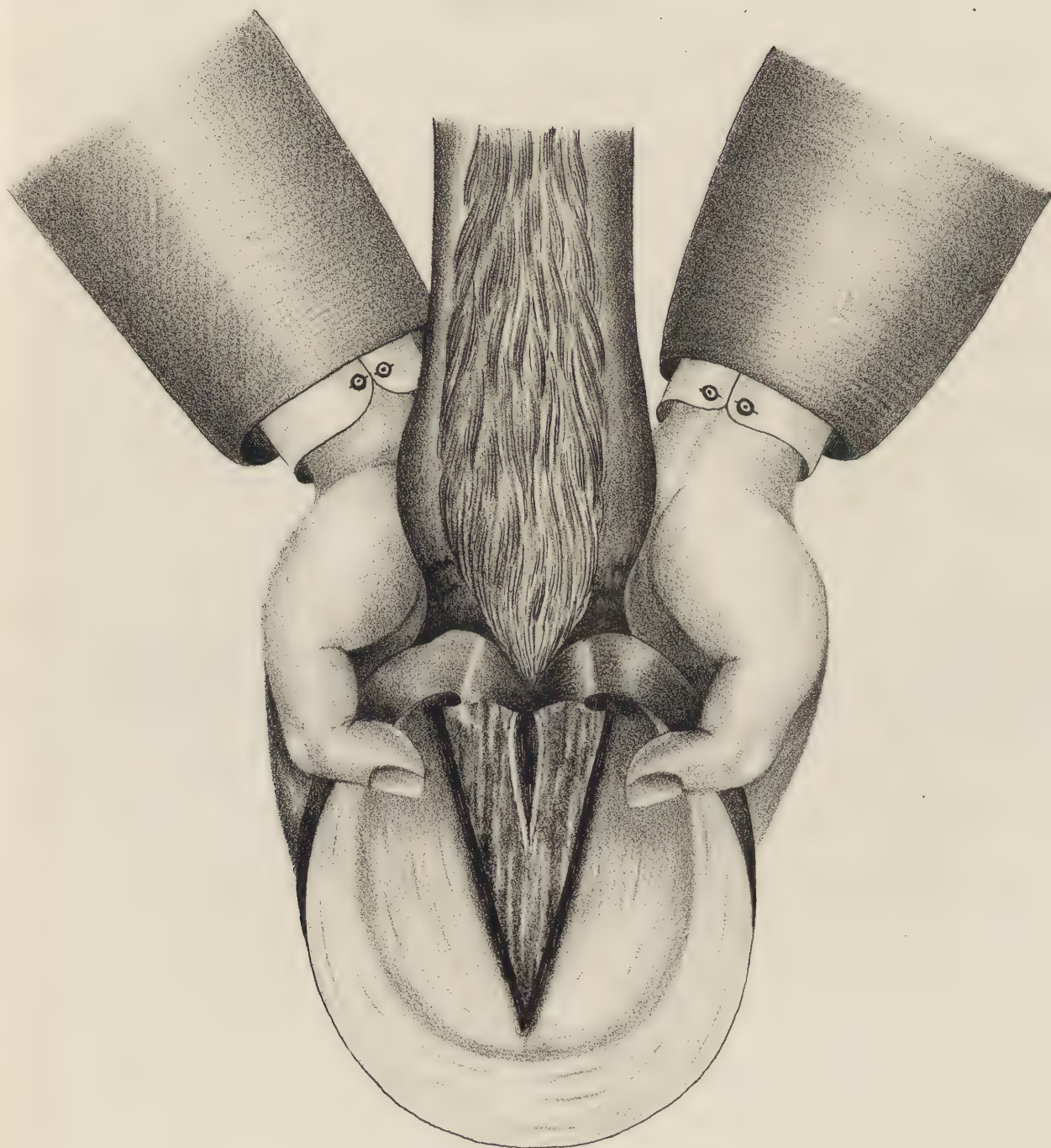
Contracted foot after treatment.







No. 15.

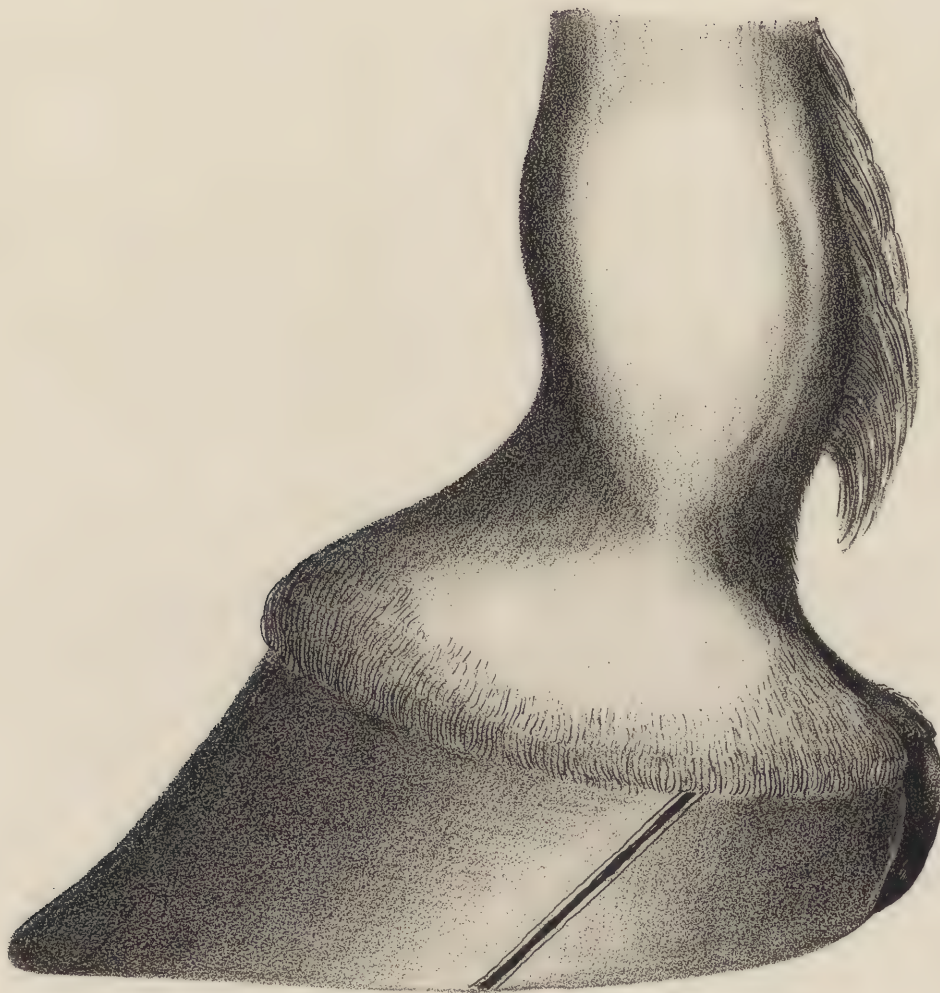


Expanding the foot after it has been pared out.





No. 16.



Lateral quarter crack before treatment, Contracted foot.





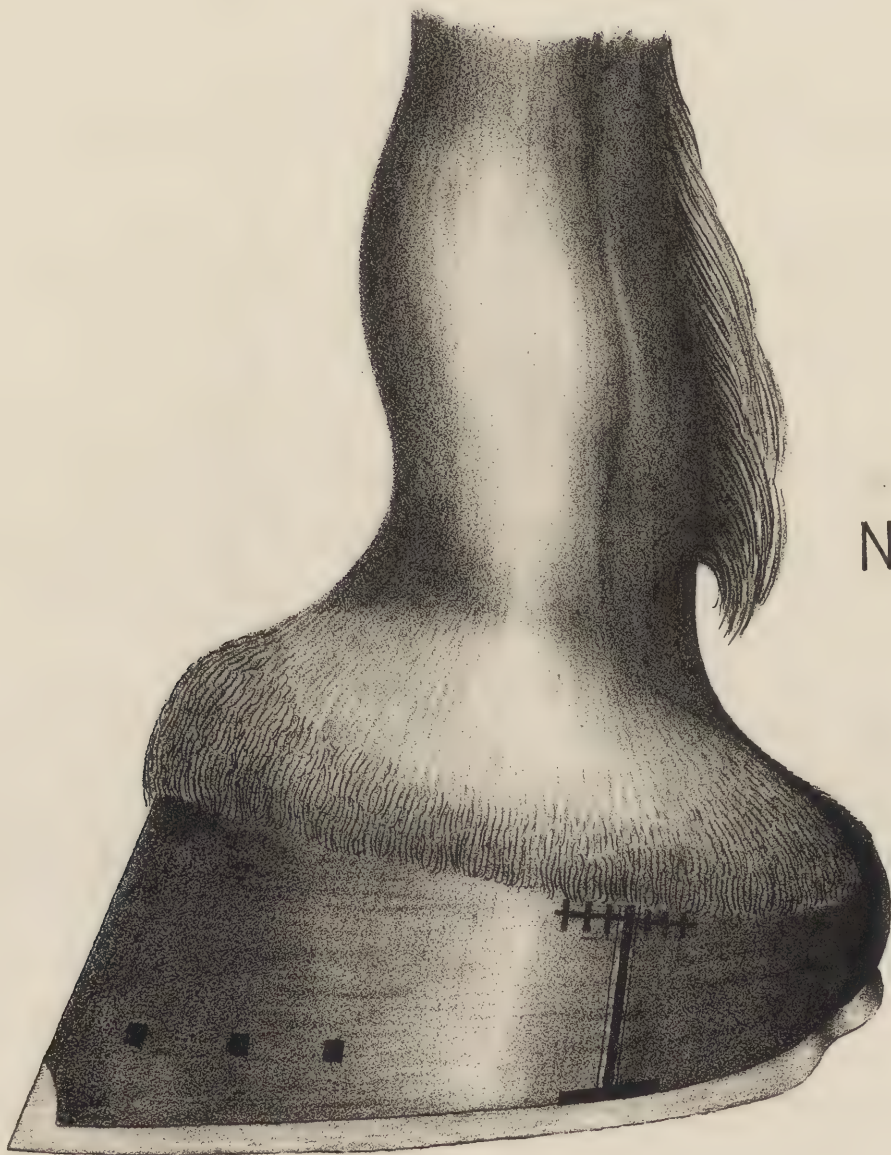


No. 17.

Quarter crack - Lateral-under treatment.







No. 18.

Straight quarter crack under treatment.







No. 19.

Quarter crack after treatment.







No. 20.

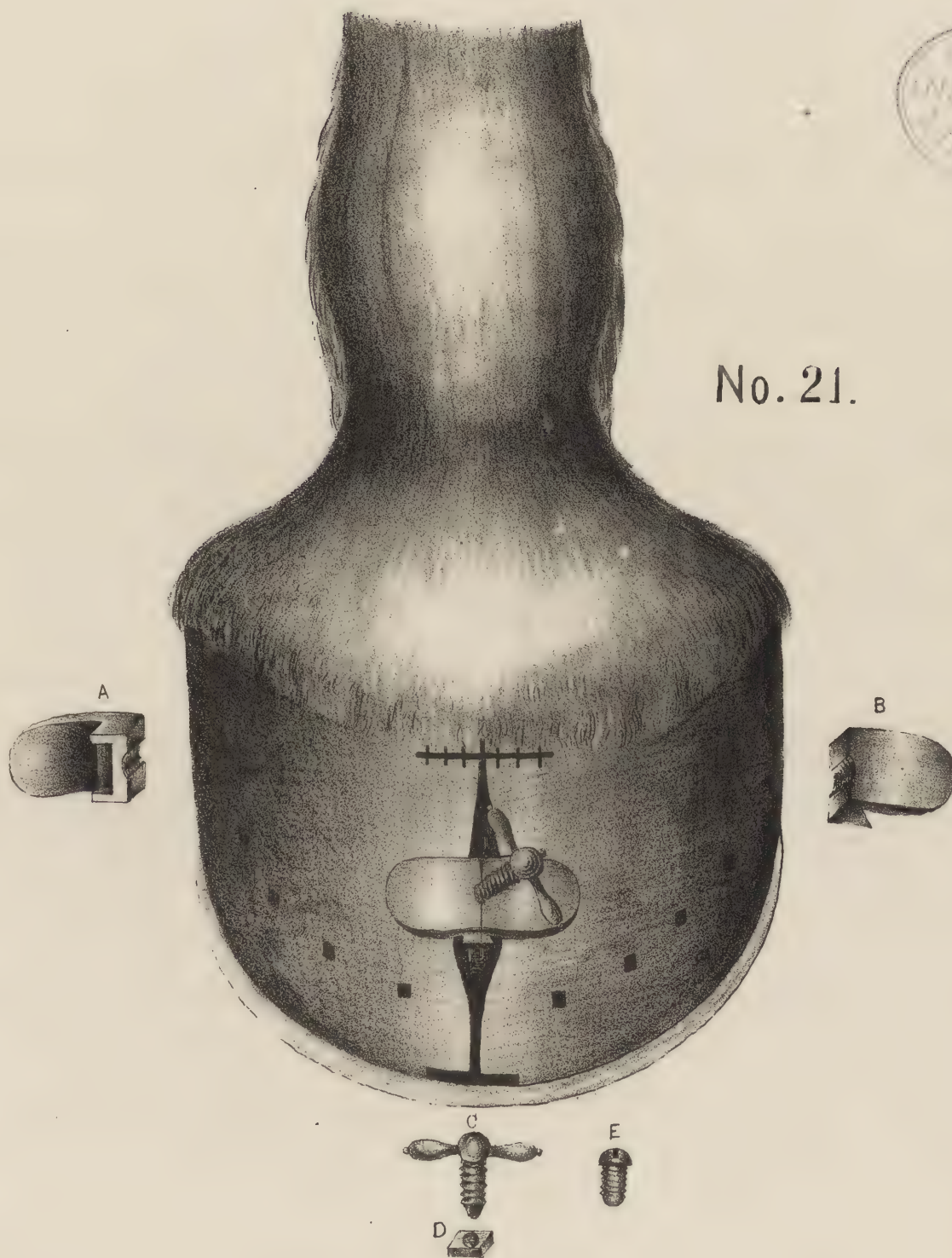
Toe crack before treatment.





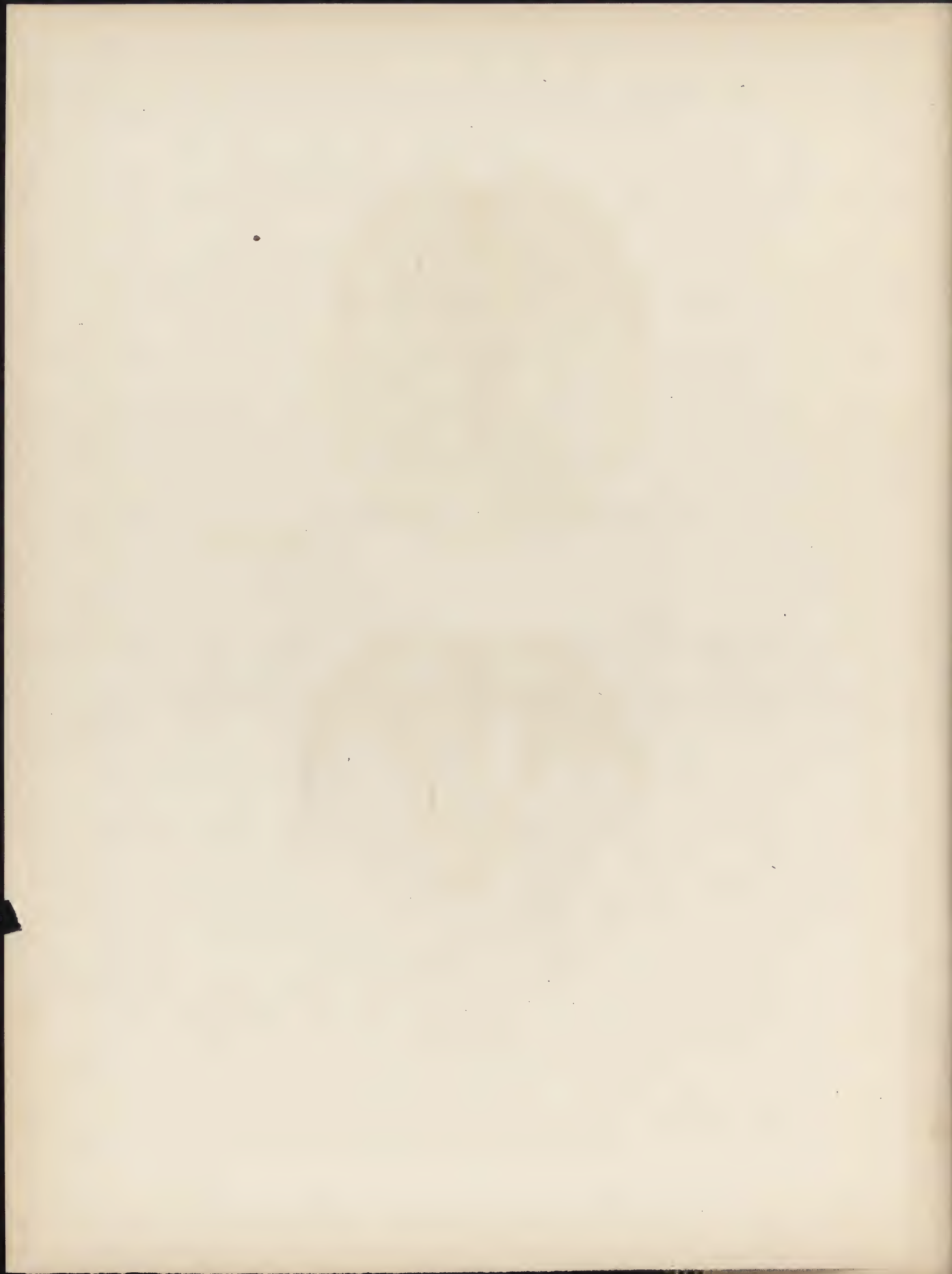


No. 21.



Toe crack after treatment,  
Explaining use of "Expansion plate".

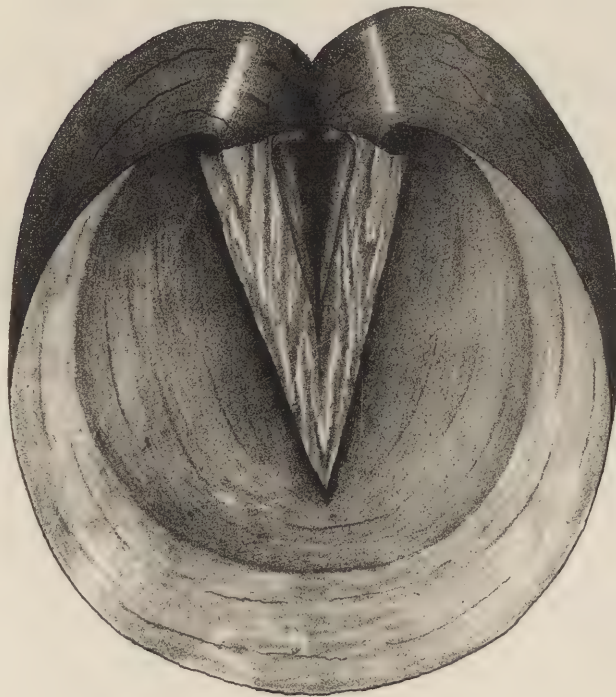






No. 22.

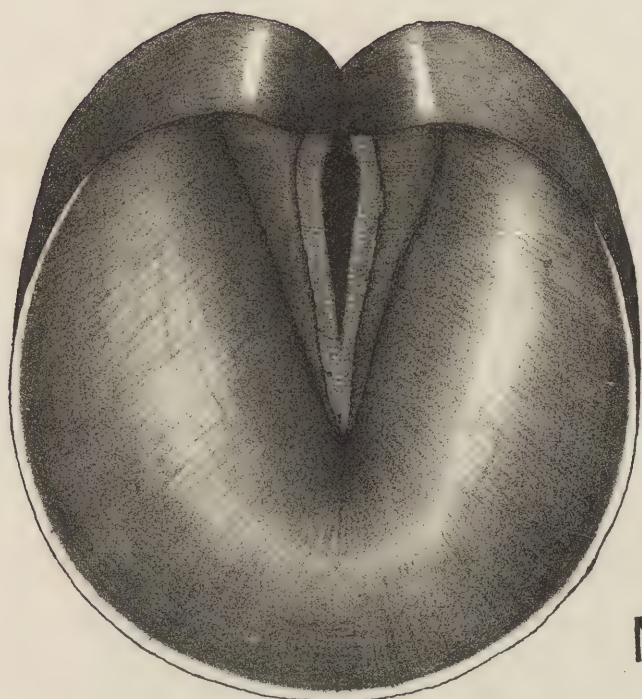
Thrush = before treatment.



after treatment.

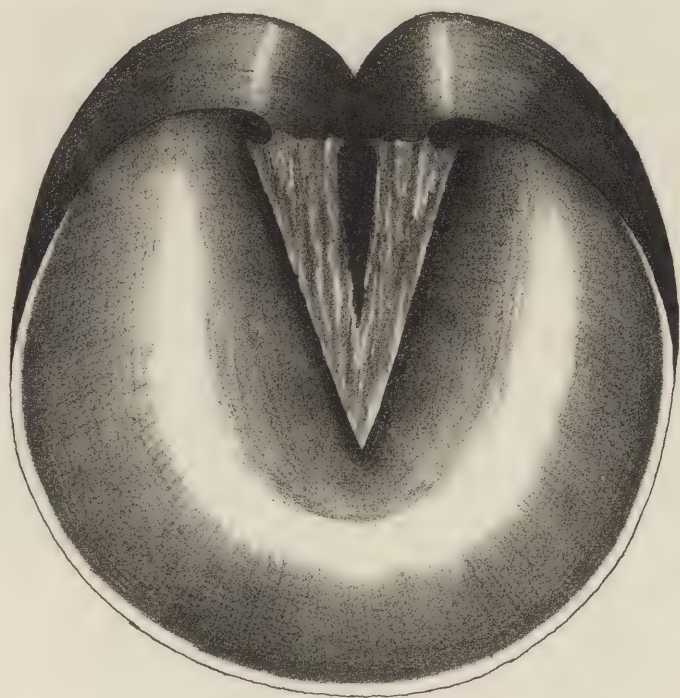






No. 23.

Before treatment, Pumise foot.



after treatment.







No. 24.

Hoofbound under treatment.







after treatment.

No. 25.



Overgrowth of hoof and neglect - Ground surface.  
before treatment.







No. 26.

Overgrowth of hoof-front view before treatment.



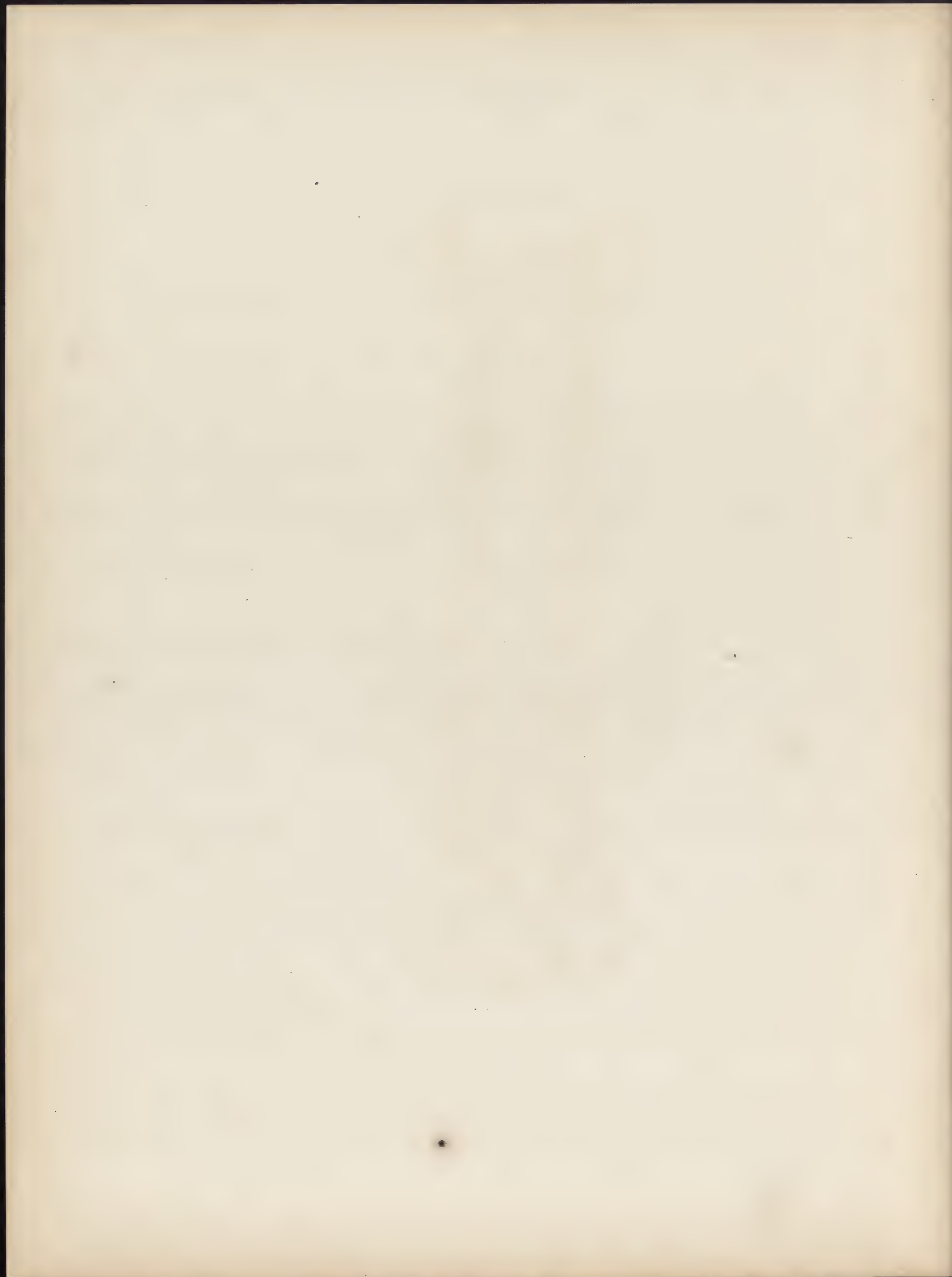




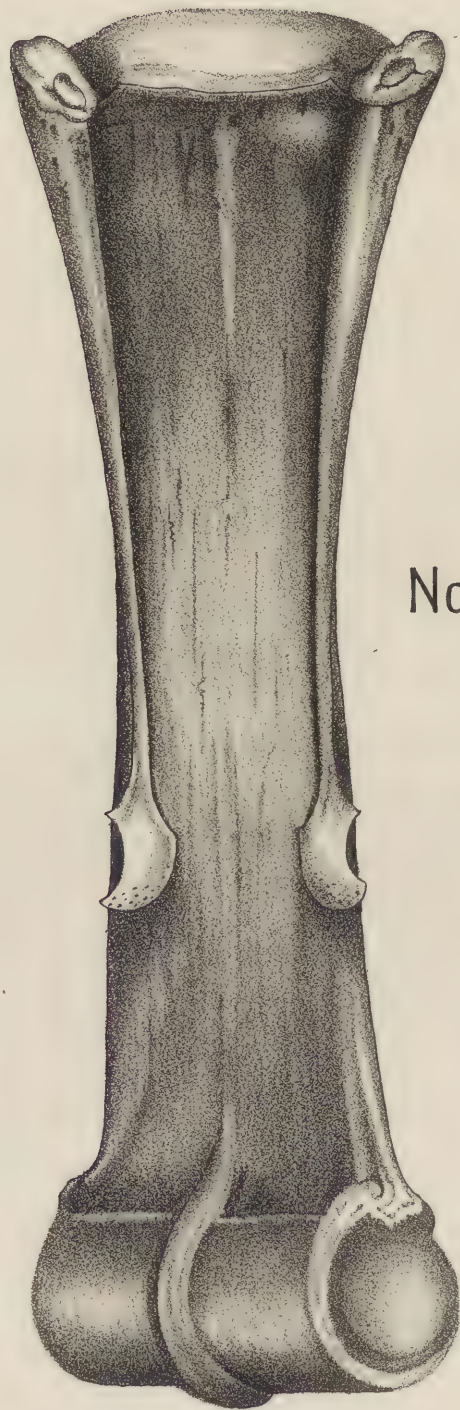
No. 27.

Overgrowth of hoof - front view after treatment





Navicula.



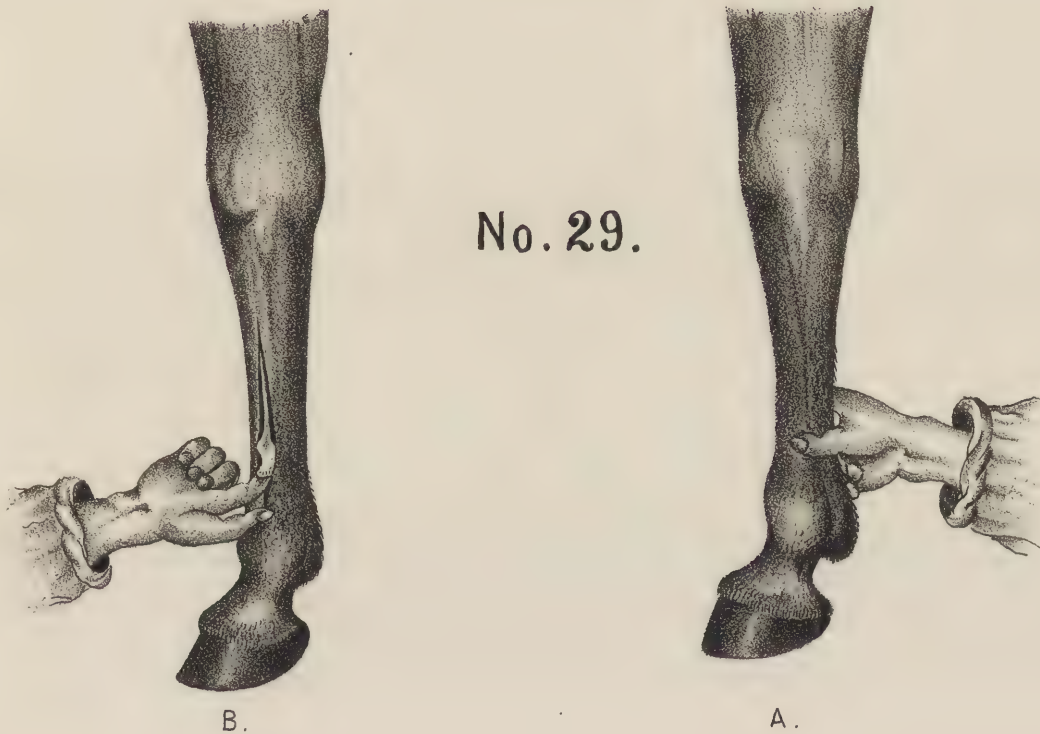
No. 28.

Enlargement of metacarpal bone.





No. 29.



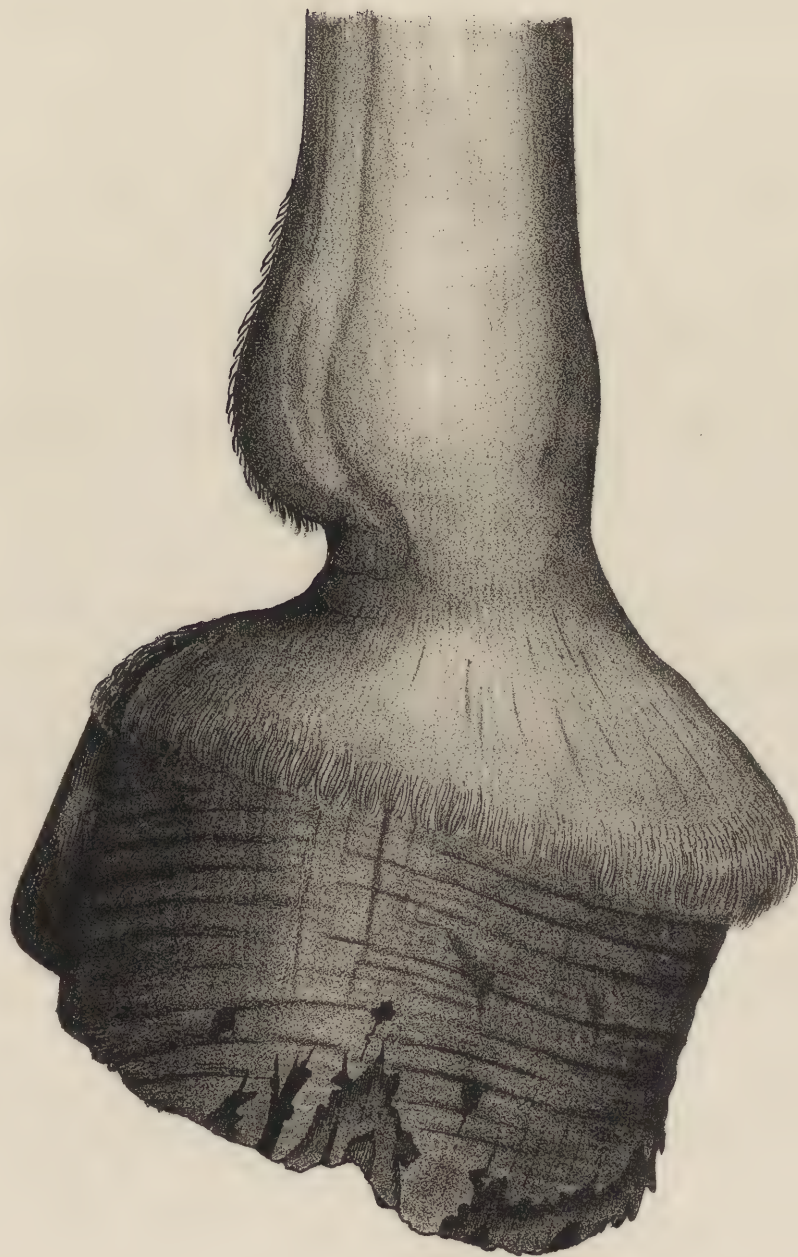
Enlargement of the metacarpal bone.

- A. showing how to find the Enlargement.  
B. showing the manner in which the incision is made  
and the Enlargement removed.





No. 30.

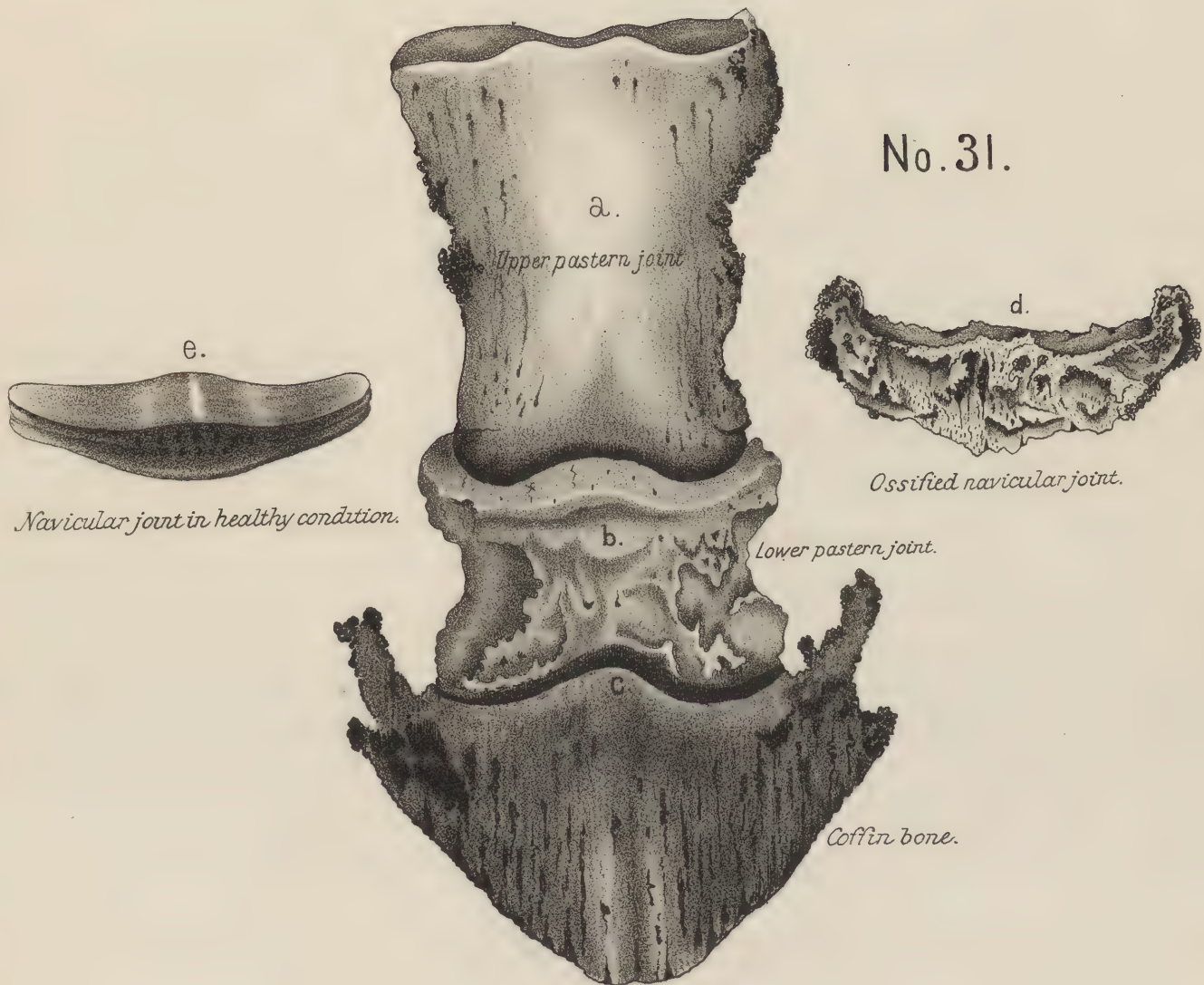


A foot that is deprived of the free use of the back tendens.





No. 31.



Ossified growth of upper and lower pastern joint, also navicular joint and Coffin bone- in a foot which has been deprived of the free use of the back tendons. See plate No. 30.







Interior surface.

No. 32.



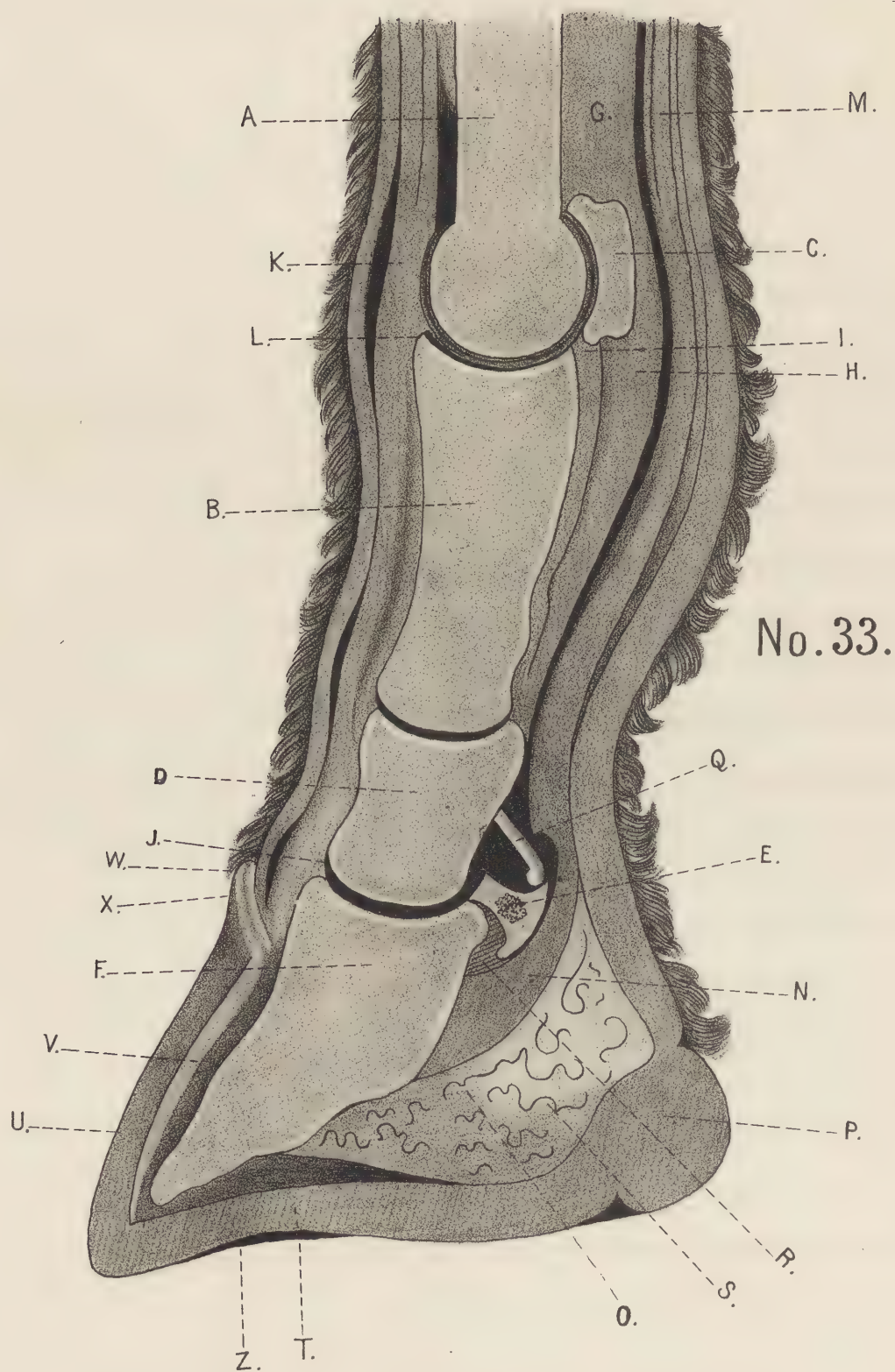
Exterior surface.

The sensitive frog.









No. 33.

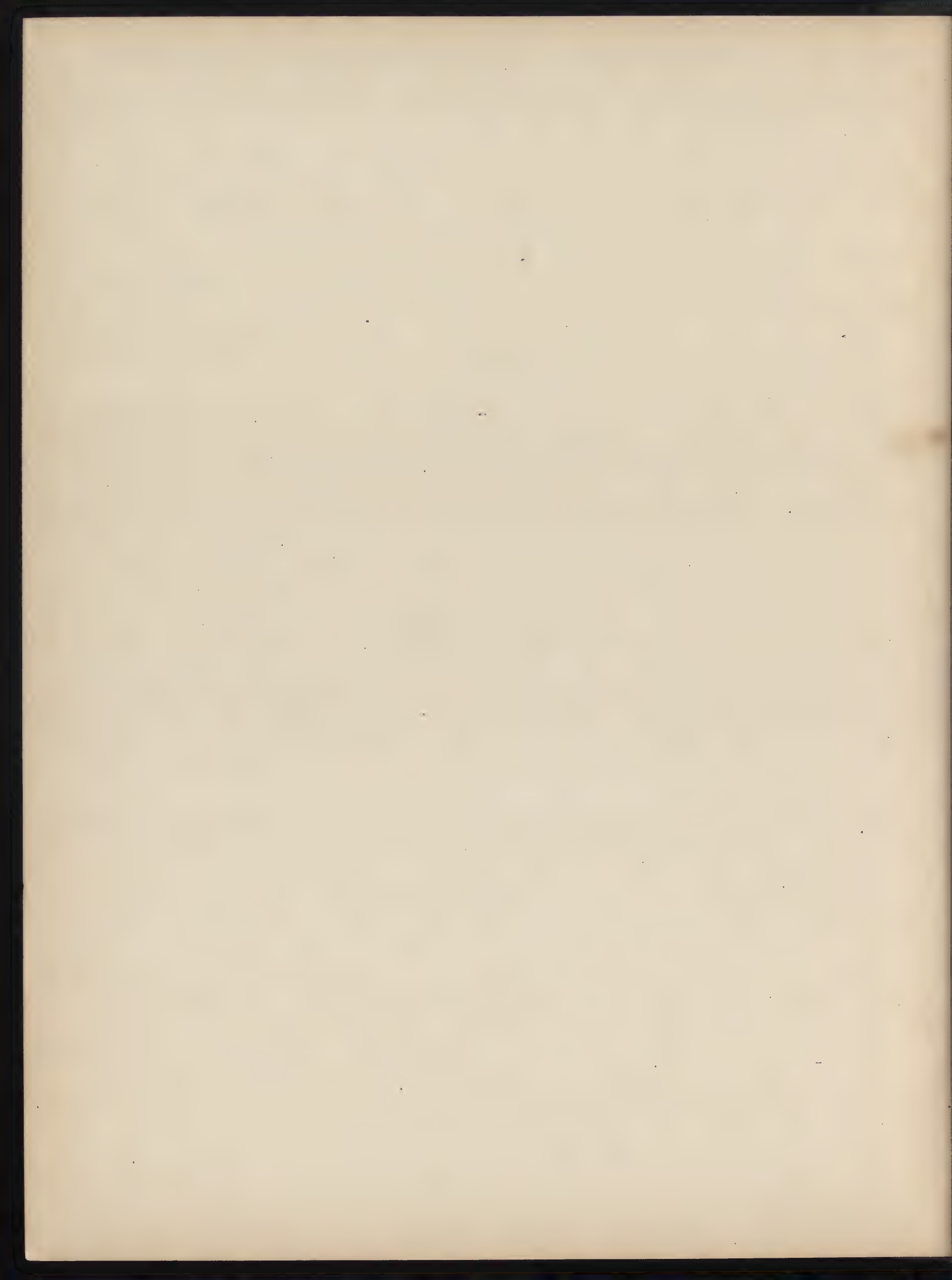
Cut of the Pastern and other Bones, Ligaments, Etc.

- A. *Shank-bone.*
- B. *Upper and larger pastern-bone.*
- C. *Sessamoid-bone.*
- D. *Lower or smaller pastern-bone.*
- E. *Navicular or shuttle-bone.*
- F. *Coffin-bone or bone of the foot.*
- G. *Suspensory ligament inserted into the sessamoid-bone.*
- H. *Continuation of the suspensory ligament inserted into the smaller pastern-bone.*
- I. *Small inelastic ligament tying down the sessamoid-bone to the larger pastern-bone.*
- K. *A long ligament reaching from the pastern-bone to the Knee.*
- L. *Extensor tendon inserted into both the pasterns and the coffin-bone.*
- M. *Tendon of the perforating flexor inserted into the coffin-bone after having passed over the navicular-bone.*
- N. *Seat of the navicular joint lameness.*
- O. *Inner or sensible frog.*
- P. *Cleft of the horny frog.*
- Q. *A ligament uniting the navicular-bone to the smaller pastern.*
- R. *A ligament uniting the navicular-bone to the coffin-bone.*
- S. *Sensible sole between the coffin-bone and the horny side.*
- T. *Horny sole.*
- U. *Crust or wall of the foot.*
- V. *Sensible laminae to which the crust is attached.*
- W. *Coronary ring of the crust.*
- X. *The covering of the coronary ligament from which the crust is secreted.*
- Z. *Place of bleeding at the toe.*

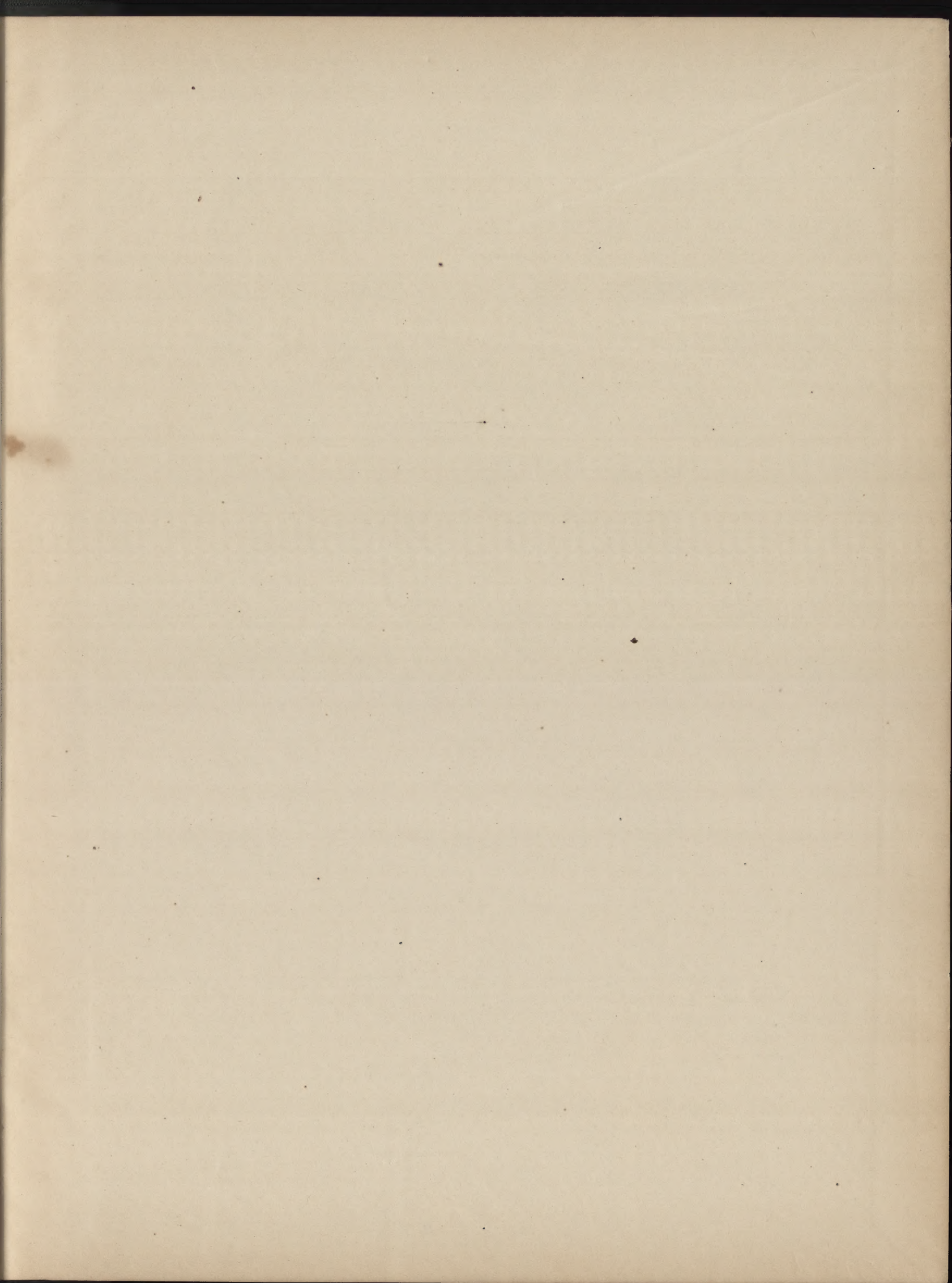














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